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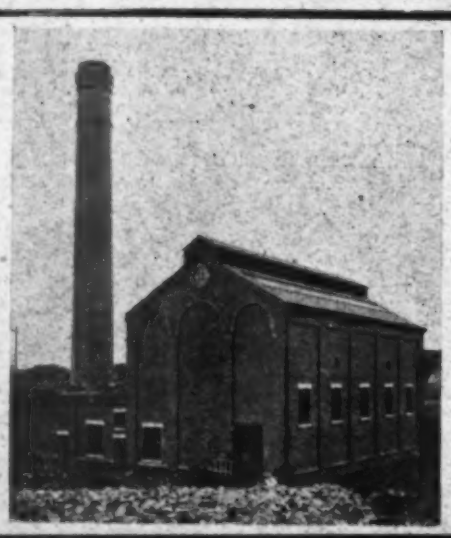

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THE BUILDER

A JOURNAL FOR THE ARCHITECT AND CONSTRUCTOR

WITH WHICH IS INCORPORATED "THE BRITISH ARCHITECT."

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WHAT IS A CHEAP HOUSE?

IF we are so to impoverish the English language as to link the good old English word "cheap" with nastiness, there is no useful purpose served by seeking an answer to the title question. Nobody of normal healthy temperament deliberately seeks nastiness, and, therefore, nobody of this sort would seek cheapness if we are to enslave ourselves to a phrase. The fact remains, however, that most of us are anxious to find the cheap thing in houses, as in other things, and while we are pleased to receive full value for the shilling, we are delighted to get equal service out of tenpence.

The quest for the cheap house is no recent phenomenon, though the War undoubtedly aggravated an already acute problem. There are, moreover, a number of things in the life of the average small middle-class man directly attributable to the War, and which have fundamentally affected the view from which economy has to be regarded. Cheapness is no firm standard from which costs may be dated, and there are few who would agree upon its interpretation.

The whole issue of the question depends very largely upon the correct demarcation to be made between economies that can most profitably be adjusted out of capital, and those which are essentially the concern of income. In devoting our attention to the middle-class outlook we may be able to define, within certain broad limits, the point at which it is economically sound to disperse a periodical outgoing by means of an immediate capital outlay, and in so doing we may be going a long way towards the end of our quest. The heavy burdens that have been cast upon the middle-class man since the War are too well known to be elaborated. What we are concerned with are the directions in which retrenchment has been exercised to restore the balance, and, in particular, its effect upon the character and standard of the small house.

In what way is the small middle-class house of to-day different from that serving the same class of occupier some fifteen years ago? And, assuming there is a difference, what are the factors which have called forth the change, and have they been served by the change? Generally speaking, we shall probably find that there are more three-bedroomed houses in this class in proportion to those with four bedrooms and over; and that the rooms are, as a rule, slightly smaller than formerly. We shall find that the kitchen unit is less pretentious and more simple in arrangement; and that exteriors are plainer and less elaborate than the style demanded and obtained under another standard of taste or fashion. We find, in fact, that the accommodation called for is very much the same as that which considered opinion has found good for the working man of to-day.

There is little doubt that, to some extent, a certain relationship of habit has been developed out of the mixing of all classes in the ranks of the Army, and that this rapprochement of distinct ways of life has found an architectural expression; but we believe that a more compelling factor has been the domestic servant problem. The need for cutting down expenses, the test of War upon our womenfolk, and a revolt against the restricted liberty of domestic service are distinct influences which have combined both to produce and solve the problem at one and the same time. The more independent young woman of to-day feels no social disgrace in honest household exercises for her own family, and has convinced her menfolk that not only can she carry this work out without loss of dignity, but with greater thrift than was the case when an uninterested party had it to do. Where a domestic servant is employed, it is no longer as the outward and visible sign of respectability, but for the useful purpose of relieving the overworked mother of something that would hinder her in her maternal duties. No longer is it done largely for ceremony, but entirely for utility. Often the domestic help, under such circumstances, is a companion, living *en famille*, or comes daily, leaving the house when the work is done. In neither case is there a need for a roomy kitchen, free of sink and unsightly pots and pans, any more than such accommodation is needed where there is no domestic servant at all.

From this follows the planning of the small, compact working kitchen, in which range and sink and dresser and store cupboards are arranged in the most convenient way possible. In other circumstances, a separate scullery was an essential addition to contain most of these fitments. The same problem is at the root of the more limited bedroom accommodation which we have noted; for with the partial elimination of the resident maid the need for her sleeping accommodation is no longer there. These things move towards the cheap house. Other factors arising out of the same problem are less clear in their direction.

There have been many ideas upon labour-saving construction and planning to make easy the path of the busy housewife. These are largely sound in principle, but in the aggregate they tend to mount up the first cost of the house. The man who has to face the choice must consider whether the additional capital outlay will bring back a proportionate yearly saving out of income; and, if so, whether it is more convenient to pay the lump now at once, or defer it by way of periodical payments of, perhaps, greater capital value. It is probable that in a large proportion of cases, the harassed middle-class house-seeker, to whom the acquiring of a dwelling is a relatively prodigious effort, will experience less financial upset if he restricts his capital expenditure to a reasonable minimum and suffers the small increases in his running expenses. For him the small house can be advised with the fewest units compatible with a reasonable foresight as to future needs; the simple house, in plan and external treatment, in materials cheap enough to be deemed not luxurious, and good enough to bring pleasure to his eye and efficiency in service. Equally it must not be forgotten that it must be a saleable proposition, in view of possible movements. Real estate is a poor investment indeed if it is not possible to realise something approaching its believed value. Complications should be avoided, and "gadgets" taboo; and natural convenience should be desired rather than that arrived at with obvious effort.

"How am I to arrive at this perfect dwelling?" asks the house-seeker. It is easier to generalise than to give the direct and useful answer, but we believe that the essentials of the cheap house will be arrived at by the man who is trained to set his ideas on paper; to simplify the science of building by the science of planning; to make a right choice of materials, and direct the right handling of them. Above all, this is the man most competent to apply considerations to the best advantage in each case as it arises. We know that the best builder makes no claim to all these qualities at once, and we have no doubt whatever that the architect has his place in all classes of building, small or great, and in none more clearly than in the production of the really cheap house.

NOTES

Manchester Town Hall Extension Competition.

We add our congratulations to the many Mr. Vincent Harris will have received from his brother architects on his success in this important competition. Mr. Harris's work is based on traditional lines, yet it is thoroughly up to date. His planning is always excellent; his elevational treatment scholarly and invariably distinguished by that sense of proportion which is so essential in good architecture. He has avoided throughout his career anything in the nature of experimental or freak building; hence his work, unlike much modern architecture, is likely to be of interest to future generations. Manchester is fortunate in obtaining Mr. Harris's services. Mancunians may be assured that their new building when erected will be a worthy addition to their City. Amongst Mr. Harris's recent works the following may be mentioned:—Sheffield Memorial Halls; Taunton School War Memorial (won in competition); Messrs. Atkinson's new premises, Old Bond Street; The Western University, in conjunction with Mr. S. K. Greenslade (of which the Prince of Wales recently laid the foundation stone); a house in Grosvenor-square; Pavilions at the British Empire Exhibition; Fire-stations at Glamorgan and Cardiff, and 900 houses for the Watford District Council. Mr. Harris also was the winning architect in the competition for new offices for the Board of Trade, which were to have been erected on the Embankment. Unfortunately this able design was not carried out. He was also placed second in the Royal Hospital School Competition, Holbrook.

The Restorers' Art.

At a time of so much so-called restoration work, we have to regard it with some caution, nor must we conclude too much from it. If it became a paramount object to preserve everything, the country itself would become merely an extension of the Museum habit. Life can only take up a certain amount of activity, and if its activities are too preponderatingly set on preserving the old, it may reach an excess like to the extensive use of oxygen to delay inevitable decease, and we may forget at the same time what is owing to our own creative genius. The records of old achievement are more easy of admiration, sheltered in the twilight of the past, and it demands far less character and appreciation to grow eloquent over these than to foster assurance in our own contribution. What we should not forget is that it is the latter which matters most, that our own life to-day should exalt the witness of beauty and encourage it in every way, and the two outlooks seldom go together. The antiquarian is generally the most impatient of the achievements of his own time, and we know how small is the equipment required to specialise on old masters! The man who has made most opportunities for his contemporaries serves best the State and posterity. This is no more than to say a right outlook will prevent us from having only eyes in the back of our head.

Preserving the Cottages.

There are several most useful provisions in the pamphlet issued by the Council for the Preservation of Rural England, in regard to retaining the character, both in design and materials, of the old cottages when reconstructing or repairing them. Much injury in the past has been done to the beautiful stone cottages in the Cotswolds by the substitution of brick for stone in the repair or reconstruction of chimneys, lacking in any identity with the original character. Another instance is where, the stone mullions of the windows becoming decayed, instead of repairing them they have been replaced by wooden framed lights of purely utilitarian character. It is not impossible to believe that as much of this has happened through want of care as from desire to save expense. When the small farm or holding was absorbed by the larger landowner, cottages and farms were divided to increase the accommodation for labourers replacing the small farmer. A long period of neglect has now to be remedied. There are difficulties, no doubt, on

Bridge at Davila, Spain.

From a sketch by Mr. A. C. Fabre. A.R.I.B.A.

A Garden Vase in Cast Lead.
(*See page* 497.)

account of the cost, for which other means will perhaps be found, but the retention, or rather the rescue of our village architecture from decay, has become a national issue, and to preserve it, an obligation of good citizenship. If only the same spirit that animates the promoters of this new Council could penetrate to our road authorities, the ancient charm of our country roads might yet be saved from further mutilation and the injury being done to provide for mechanical traction arrested.

The Gainsborough Bi-Centenary.

It would astonish the gifted Gainsborough, whose magnificent landscapes hung in his dark hall and on the stair for years, because no one would buy them, were he able to see the scale of the great commemoration of his art to be held in the Ipswich Museum and Art Gallery in October next. The collection is probably the most important yet brought together, and pictures are being lent by private owners, corporations, and Museum and Art Galleries. Norwich has had already its commemorative exhibition of old Crome and other Suffolk painters, and this one of a yet greater contemporary bids fair to become the most important. English art, incomparable in its way, has suffered during the last half century, owing to cosmopolitan influences overriding the national character, which in painting, as in all art, is so important. It is no insular prejudice to believe we grow best on our own roots, and that nothing can make up for the loss of our own identity expressing itself intuitively and without foreign prepossessions.

G. F. Watts and Modern Art.

The more or less traditional character, as derived from the great masters of Italy, which informed the work of Watts fitted the character of his outlook, always grave and dignified and exalted by a subject matter always significant. And it is interesting to contrast with his approach, the widely differing interpretation in much of the art of to-day. Taking representative examples of the latter, such as the pictures recently acquired for the Tate Gallery by Stanley Spencer, "The Resurrection," and Mrs. Dod Proctor's "Morning," we see a contrast both instructive and significant. It was Aristotle who, in recording the primary attributes of life, gave "thought" as one of the chief of them. In such a view the picture of the "Resurrection" is childish and has no reality of interpretation whatever, and this absence of creative thought limits the resources of the painter to a much more contracted use of his vehicles. If we, for instance, compare it to the "Eve Repentant" by G. F. Watts at the Tate, the greater resource and mastery in the use of his vehicle is obvious when compared with the more conventional handling of the former. And so it is in the case of Mrs. Dod Proctor. And in observing this we understand the primary limitation in much of popular modern art and the reason for it. Painting only takes wings on thought, and the subject matter determines the level, as a noble thought will robe itself in a beautiful expression. Both the artists we have named adequately exhaust the resources of a contracted and very materialistic outlook, and do it very wonderfully. But their limitations are those of an outlook in a darkened room. Their outlook will not—cannot—take them any further. Action cannot rise above the thought which inspires it. Relativity here is axiomatic, not questionable.

Restoration of Lincoln's Inn Fresco.

This, though a word of rather evil omen, owing to the destruction wrought in Victorian days, is yet one to give assurance. It was Goethe who said, "men are to be valued as they know how to value," and in preserving the fine wall painting of a master, so far as this can be accomplished, the statement receives confirmation. For wherever the achievements of noble human activity are found recorded, they should be regarded as a most precious inheritance, a support and inspiration to our own culture. So we are glad to hear of the restoration of the great wall painting in Lincoln's Inn by G. F. Watts. This very exalted piece of wall painting has been gradually fading away, owing to the bad conditions of the London atmosphere. We are told by a contemporary that the painting "has been restored to its original glory." This, however, is an exaggeration of what is possible, but through what has been accomplished, a further extension of life has been given to it. Another interest is given to the great painting that it contains the portraits of a number of the artist's friends, who were his famous contemporaries.

Small Statues in Cast Lead.
(*See page* 497.)

GENERAL NEWS

Professional Announcements.

Mr. William Davidson, F.R.I.B.A., of 4, Melville-street, Edinburgh, and Mr. M. M. Ochterlony, architect, of 18, Melville-street, Edinburgh, have entered into partnership and will carry on under the name of Messrs. Davidson and Ochterlony, architects, at 2, Coates-crescent, Edinburgh.

Mr. H. H. Connybeare, quantity surveyor, of 17, Southampton-street, Bloomsbury, W.C.1, has succeeded to the business of the late Mr. Morgan H. Young, of the same address. Telephone : Holborn 4557.

Mr. W. G. Cruickshank, surveyor, has removed his office to No. 7, Southampton-street, Bloomsbury-square, W.C.1. Telephone : Holborn 1175.

Mr. W. T. Davenport, F.S.I., quantity surveyor, has removed his offices from 32 Victoria-street, S.W.1, to 13, South-square, Gray's Inn, W.C.1. Telephone number, Chancery 7322.

Surveyor's Estate.

Mr. Thomas James Carless (72), of Sheen-road, Richmond, Surrey, left £28,932 (net personalty £20,652).

Engineer's Estate.

Mr. Joseph Mackay, M.I.Mech.E., of West Park, Eltham, and of Bank Chambers, High Holborn, W.C., late Chief Government Marine Surveyor at Bangkok, Siam (personal estate in Great Britain), left £44,300.

Sir R. W. Edis's Estate.

Colonel Sir Robert William Edis, K.B.E., C.B., V.D., of The Old Hall, Great Ormsby, Norfolk, a former president of the Architectural Association, who acted for the late King Edward in various alterations and additions at Sandringham and at York-cottage, and who died on June 23, aged 88, left estate of the gross value of £68,315, with net personalty £65,694.

York Minster: Return of "Great Peter."

After an absence of a year, during which time it has been recast, so that it is now said to be the deepest-toned bell in Great Britain, York Minster's big bell, Great Peter, has returned to York. The bell will be dedicated on October 2.

Broadstairs Church: Design by a Monk-Architect.

It is hoped to commemorate the fiftieth anniversary of Broadstairs parish by laying the foundation-stone of the new church of Our Lady of Bradstow. It is understood, says the *Catholic Times*, that the plans will be entrusted to a Belgian Benedictine monk-architect, the designer of the National Basilica of the Sacred Heart which is to be built at Brussels.

University of London, University College.

The session 1927-28 opens at University College on Monday, October 3. Day students of the Bartlett School of Architecture will be received by the Provost, Professors and other members of the staff on Monday and Tuesday, October 3 and 4, from 10 a.m. till 1 p.m. Students of the evening courses in architectural design and of the architecture atelier will assemble on Wednesday, October 5, at 5.45 p.m. A special course of five lectures on "The London Building Acts as Affecting the Practising Architect" will be delivered by Professor R. Elsey Smith on Mondays at 6 p.m. beginning October 24.

Among the public lectures that have been arranged for the first term are the following: "Egyptian Architecture," by Professor Sir Flinders Petrie, F.R.S., on Thursday, October 6, at 2.30 p.m.; "The Equipment of a Mediæval House," by Mr. H. Clifford Smith, Assistant Keeper, Victoria and Albert Museum, on Tuesday, December 6, at 5.15 p.m. Particulars of these and other public lectures may be had on application to the Secretary, University College, London, W.C.1. A stamped addressed envelope should be enclosed.

Bi-Centenary of John Wood.

Bath is to celebrate in a few weeks' time the bi-centenary of John Wood, who began his great work of rebuilding and replanning the city in 1727. The Georgian architecture of Bath is almost a national monument and many leading architects and others interested in civic architecture and town planning will take part in the celebration. An exhibition of old prints and drawings will be held, and it is hoped that some of Wood's original drawings and plans may be forthcoming. So far as is known no portrait of John Wood exists.

Land Drainage.

The Royal Commission on Land Drainage have just returned (says the *Times*) from a highly instructive and interesting inspection of the Dutch systems of drainage, which they have carried out at the invitation of the Netherlands Government. The Commissioners examined typical drainage areas and river outfalls, and saw the works of sea defence and land reclamation which are being carried out south of The Hague and on the Zuyder Zee respectively. The Dutch systems of drainage rating and administration were explained to the Commissioners in lectures given by the Dutch experts, and practical examples were pointed out on the ground.

Exterior of a House in Mount Street, Park Lane.

View showing Ornamental Lead Casing to Soil, Vent and Waste Pipes.

(*See page* 498.)

COMPETITION NEWS

Street Improvements, Newport (Mon).

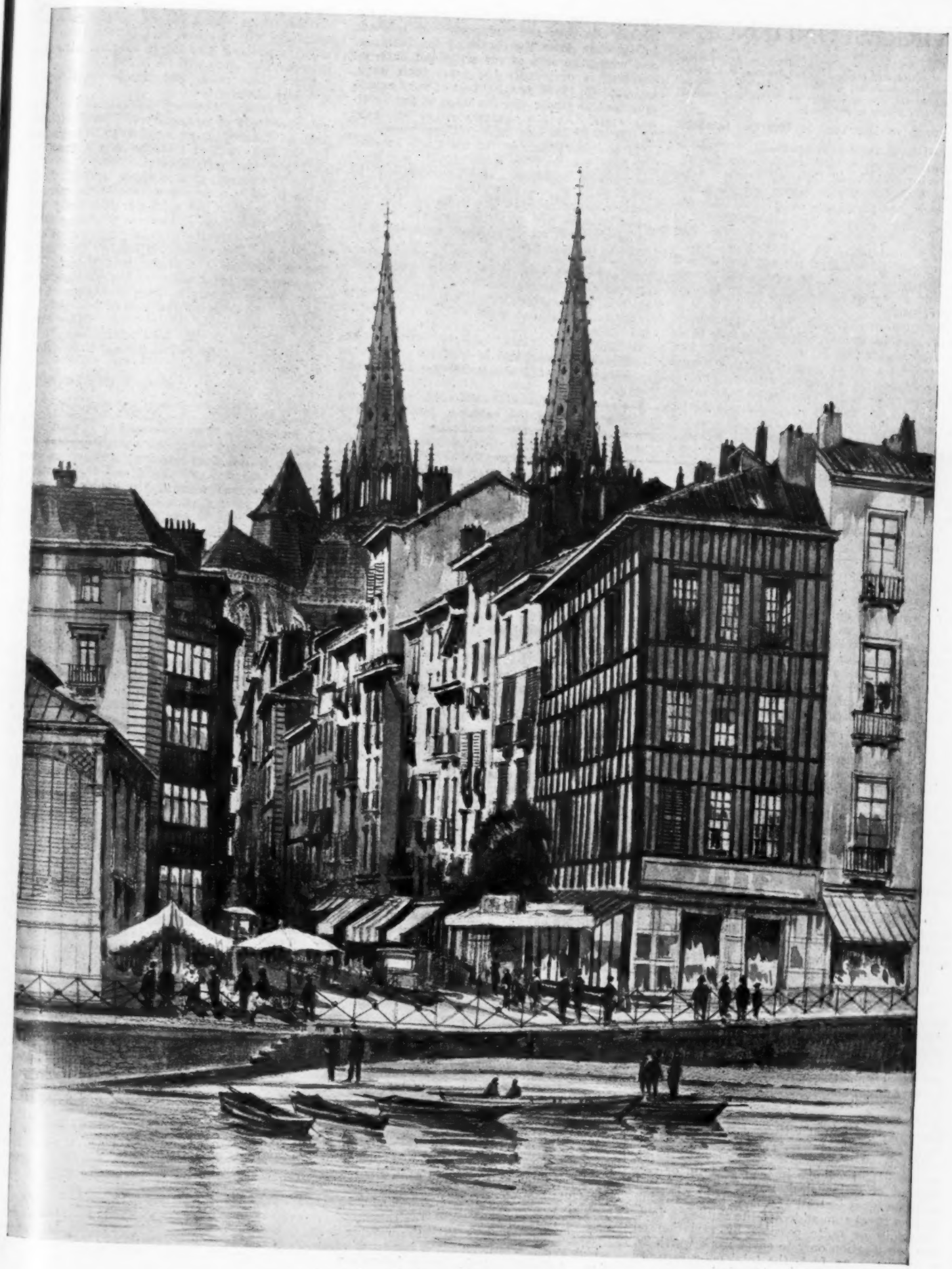
Plans have been prepared by the Newport (Mon) Corporation for proposed improvements at the junction of High-street and Shaftesbury-street, and a premium of 100 guineas is to be offered for the best design for buildings on the Corporation land fronting both thoroughfares.

Manchester Town Hall Extension.

Mr. E. Vincent Harris, of St. James's-square, London, has been awarded the £1,000 premium for the best design for an extension of Manchester Town Hall. The extension, which will accommodate the staffs of the waterworks, education, public health, and electricity committees, and is to make provision for a new reference library, lecture hall, and Council chamber, will cost over £1,000,000. The site, which adjoins the present town hall, is triangular. One frontage will be to Mount-street, another to the Midland Hotel, and another to St. Peter's-square. The opportunity will be taken for street widening and for the enlargement of St. Peter's-square. Sixty-four architects entered for the competition, which closed on January 8, and from those entrants the assessors, Messrs. T. R. Milburn, Robert Atkinson and Ralph Knott, selected the following six architects to submit final designs :—Messrs. Bradshaw, Gass and Hope, Bolton; Messrs. Collcutt and Hamp, London; Mr. J. B. S. Cowper, London; Mr. Harry S. Fairhurst, Manchester; Mr. E. Vincent Harris, London; and Mr. E. Berry Webber, London. On completion of their designs all these architects were entitled to a fee of £500 each.

COMPETITIONS OPEN.

Municipal Buildings and Business Premises, Herne Bay. Premiums: £150, £100 and £50. Professor A. E. Richardson, F.S.A., F.R.I.B.A., assessor. Apply Clerk to Council, Westminster Bank House, Herne Bay. Deposit of £1 1s. required:	Particulars published in "Building," in date.	Sending July 8
Municipal Buildings, Wimbledon. Premiums: £200, £150 and £75. Mr. H. V. Ashley, F.R.I.B.A., assessor. Apply Mr. Herbert Emerson Smith, LL.B., Town Clerk. Deposit of £2 2s. required:		Sending in July 15 Nov. 30



Bayonne.

From a drawing by MR. A. C. FARE, A.R.I.B.A.

CORRESPONDENCE

[While we are glad to publish letters on professional and other matters of interest to our readers, it must be understood that we do not necessarily endorse the remarks of correspondents, who will oblige us if they will express their views as briefly as possible.]

The Porch of the Temple Church, London.

Sir,—I have to thank Mr. A. R. Powys for his courteous reply and explanation to my letter which appeared in your issue of September 9. It certainly seems extraordinary that the Benchers of the Middle Temple should consult such a reliable authority as the S.P.A.B., and then ignore its decision. I have studied many of Mr. William Weir's restorations, particularly in East Anglia, and I doubt if there is a safer guide to the handling of ancient buildings in Britain at the present.

I could not examine the outer west arch, as it was covered by tarpaulins, but the three shafts of the jambs of the inner west door which were cut out at the end of August were practically perfect. I agree with Mr. Powys that these were not original work, but surely sound work of 1840 date is more valuable than work of to-day.

William Davidson, F.R.I.B.A.

Edinburgh.

Approximate Estimates by Cubing.

Sir,—It does not appear to be sufficiently recognised that there are two distinct stages in this work involving (1) A question of fact; (2) A matter of personal opinion or experience.

The question of fact is a matter of measurement only. "What is the cubic content of the building?" Because it is a question of fact it does not need a Committee of R.I.B.A. to tell us how to set about it. Some computations are at best approximate, and it becomes a question how far accuracy shall be taken. The area of a circle, for example, is πy^2 for π we may take 3.1, 3.14159 or 3.1 etc. to a hundred places of decimals and even then not have computed it exactly. It is much the same with the cubic content of a building. We ascertain it more or less accurately as the occasion and our judgment demand. It has never been the custom to measure in small projections such as cornices, eaves, bargeboards and the like. It is much the same with chimneys, dormers, lanterns on the roof; where they are small they are ignored, where they are important they are measured. According to custom the concrete below footings, for some undefined reason, is never measured.

Projections involving much cost in proportion to size are generally separately estimated for by other means, but they may be measured and included, the price being modified accordingly. (See below.)

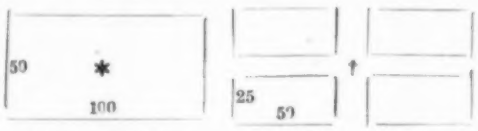
Having ascertained the cubic content "What price per foot cube is to be used?" This is purely a personal judgment. It depends not merely on the nature of the building but on the specification. Let us exaggerate a little in order to understand.

"A" builds a house; its cost works out at exactly 1s. a foot cube. "B" erects a house adjoining, similar in plan and elevation and all detail shown on drawings, but it has four coats of paint instead of three coats like "A." Obviously it must cost more than 1s. a cube foot.

If instead of merely an extra coat of paint we have 1¼ in. floors instead of 1 in. or oak instead of yellow deal, if walls are panelled or plate glass instead of sheet, there is going to be a great sum added to the shilling a foot. It would be quite possible by variation on the specification only to cover work worth 2s. a foot or 1s. a foot, the total cube capacity of the two houses being identical.

Without varying the quality of the work, it is possible to cause an increase in the rate and total cost while at the same time the cube is actually diminished. "C" proposes a simple factory 100 ft. by 50 ft. on plan and one story high. Estimate (1) roofs it in one span, 50 ft. steel trusses are needed. Estimate (2) roofs it in two spans, the 25 ft. trusses are far lighter but they need support from columns and girders down the centre of the building, and while the area of raftering and external covering is practically the same both ways, estimate (2) involves a 100 feet of very expensive central gutter and drainage to the external walls. At ¼ pitch two spans will save 15,000 to 20,000 feet cube and cost more.

If the manufacturer for his trade requires his 5,000 feet of floor space spread over several smaller buildings, each surrounded by brick walls, it is evident that while the total cubic content may be the same yet the cost per foot cube will go up because the division walls or, even more, separate external walls have to be paid for.



*Shows 300 feet run of wall.

†Shows 4 by 150 equals 600 feet of external wall.

We see then that while the cubic content remains unaltered the rate per foot will vary with changes in the specification or by subdividing the voids. The smaller the voids the higher the rate per foot.

Reversing this we may say the larger the voids the lower the rate per foot cube without any change in the nature of the design or the specification. In the case of ordinary small houses the floor area can be increased by about 50 per cent. while the total cost of the building is only increased 25 per cent. Anyone can test this with a set of plans and the priced quantities. Ordinary working drawings for small houses are made on a scale 1 in. equals 8 ft.; the quantities will apply to that. Let us read the same plans with a different scale, say, 1 in. equals 10 ft. we find approximately that gives us an increase of 50 per cent. floor area. If our plan is 6 in. by 8 in., then with the ⅛ in. scale we have 48 by 64 equals 3,072 sq. ft. with the 1/10 scale 60 by 80 equal 4,800 sq. ft., which is rather more than 50 per cent. increase.

Let us compare two rooms, say, 10 by 10 equals 100 sq. ft. and 12 by 12 equals 144 sq. ft., which is near enough 50 per cent. increase for present purpose. The area of flooring material and ceiling material will be increased 50 per cent. (round figures), but the length of wall will be 4 by 10 equals 40, or 4 by 12 equals 48. The run of wall, skirting, cornice will therefore only increase 20 per cent. for 50 per cent. increase of floor area and the number of mitres, no increase. For roof, generally, we may follow the 50 per cent. as with floors but eaves and gutters only need 20 per cent. in the run. Angles, heads and down pipes no increase at all. Many items will not change, bath, w.c., sink, and sanitary fittings and their junctions to water, wastes. Drains increase 20 per cent. with the run and nothing in expensive items like manholes. Doors and fireplaces may have a very slight increase in the larger rooms for æsthetic reasons but it is not likely. In some cases the wider spans may need 11 in. joists instead of 9 in., but on going through the whole bill in detail it will be found that 50 per cent. increase of floor area means only about 25 per cent. extra on total cost, or a much lower rate per foot cube.

Taking a house of 30,000 feet at 1s. 6d. we have £2,250. With same height (no adjustment for roof) extra 50 per cent. floor makes our cube 45,000. Twenty-five per cent. on cost gives us, say, £2,820, or only 1s. 3d. per foot cube, all details being the same.

Again let us state this the reverse way, which represents what often happens in practice. An architect designs a house containing 45,000 cu. ft.; the builder's estimate is £2,820, which is more than the client is willing to spend. He limits the outlay to £2,250, but wants the same arrangements with smaller rooms. It will be no use for the architect to ascertain that the actual tender for the larger house works out at 1s. 3d. and then expect a smaller house at the same rate. As the rooms shrink in size so the rate per foot cube will increase, and by the time the rooms are about two-thirds original size the rate per foot cube will be 1s. 6d.

From these notes two things seem to be specially obvious:—

(a) Extreme accuracy in calculating the cubic content is unnecessary. Small details such as chimneys recommended to be included by R.I.B.A. will at most be only a fraction of 1 per cent. on the total.

(b) The correct rate to apply is vital. If in order to effect a reduction in cost the plan is reduced in scale the price per foot cube will go up. Alterations in shape may reduce cubic content but actually increase the cost of the building. From which it follows that tabular statements of average prices per foot cube are of little value unless at the same time we are acquainted with the nature of the design, the sizes of the rooms, the date of erection and many other items. The extra cost of paint in the specification may have more effect on the estimated cost than cubing in the chimney stacks.

Horace R. Appelbee.

Is "Cube" a Reliable Factor?

Sir,—This matter—together with all methods of approximate estimating—was discussed in detail in articles published in your journal about April, 1926, and these articles have since been reprinted by yourselves under the title of "Approximate Estimating."

Anyone who wants a reply to this query will find in this pamphlet, with reasons for conclusions arrived at and constructive suggestions which, if adopted, would afford better data and sounder methods for approximate estimates.

It is possible that the suggestions embodied in this pamphlet might prove a useful starting point, and that architects, quantity surveyors and contractors might co-operate to thrash out a system which would be of benefit to their respective selves and to the industry at large.

Alan W. Davson.

THE ROMANCE OF THE MIDDLE AGES

Sir Banister Fletcher, F.S.A., F.R.I.B.A., on Wednesday last gave the introductory lecture of a course of twenty-four lectures on "Mediæval Architecture" at the Central School of Arts and Crafts, Southampton Row. He dealt first with the nature of the course, which is given under the auspices of the University of London, and explained that he would deal with the study of architectural history on broad lines from a popular point of view and trace its evolution in the different countries of Europe. He referred to architecture as a visible exponent of civilisation uniting and embracing the other arts, and pointed out that all modern design was founded upon old art, although adapted in order to conform to existing conditions. Architecture being the basis of all design, a knowledge of it was necessary not only to architects, designers and art students, but practically to the whole community. All who travelled required a knowledge of that subject, since the lands they visited were as a closed book without that knowledge. Moreover, the architectural work of the present day was stimulated and refined by a right study of the best work of the past.

The lecturer illustrated his lecture with lantern slides, of which some twelve hundred will be shown during the course. He showed that mediæval architecture was a continuous evolution from the round-arched or Romanesque period to the pointed-arch or Gothic period, and was the result of forces and tendencies underlying the whole life of mediæval times. Views were shown comparing the architecture of the ancient periods of history.

THE PLACE OF LEAD IN THE ÆSTHETICS OF ARCHITECTURE

BY A SPECIALIST.

AN attractive and beautiful frontage, designed in accordance with the true principles of art, will make a direct appeal to persons who know nothing of the excellence, or otherwise, of the general planning, or of the soundness of the construction. Yet, important as are æsthetics in architectural design, it is beyond question that an architect who can successfully combine other excellent qualities with artistic treatment will meet with a greater measure of success than will another who lacks the ability to secure the combination of an artistic frontage and a well-planned and conveniently arranged interior. In fact, it may be stated that the most successful of modern architects are they who are able to introduce into their planning the following four essentials:—Beauty in the design; convenience in the arrangement; solidity in the construction; and moderation in the cost.

Lead has been extensively used for decorative purposes in the past, and, after a period of comparative disuse, is now coming into its own again, as many modern buildings show. Many people who are connected with architecture and the construction of buildings, whilst fully aware of the durability of lead, are still quite unaware of the extent to which it may be made use of as an artistic feature. Yet lead has artistic possibilities as great as those of any other metal, with the added advantage that it is practically indestructible, and that it does not require painting; in fact, the nature of the metal is such that its appearance improves with age. The combined effects of the atmosphere, moisture, and frost, which are so destructive to the ornamental features of stonework and brickwork, do not affect the rich ornamentation of which lead is capable. Again, when the finer ornamental features of masonry or brickwork are impaired or destroyed by force (as the result of a powerful blow, for example), it may be difficult, or well-nigh impossible, to repair or replace them; but in the case of lead, not only can any necessary repairs be easily and most successfully carried out, but the portions that have been repaired can be made as good and as sound as they were before being injured.

No other metal lends itself to artistic treatment as easily, and to the same extent, as does lead; not only can it be cast to any desired pattern, but it can be worked by tools to the various shapes desired, and ornamental features and details may also be worked upon it in much the same manner as repoussé work is carried out in the case of the harder metals, except that with lead it is possible to achieve results that would be difficult to obtain with any of the other metals in general use.

That architects of former times were fully aware that lead lent itself to decorative treatment is proved by the number of ornamental rainwater heads and pipes which, made of lead, are to be seen, still in an excellent state of preservation, and giving satisfactory service on a number of famous and historic buildings. There are still in existence at Hampton Court a number of excellent examples of cast lead rainwater heads, and stacks of rainwater pipes, that have withstood the wear and tear of centuries. The lead heads bear the date 1528. At St. John's College, Cambridge, there are lead heads bearing the date 1599 which continue to give as good service as when they were first fixed, as also do the lead stackpipes to which the heads are connected. During part of the nineteenth century there was a considerable falling off in the amount of cast sheet lead used for making ornamental rainwater heads and stackpipes, storage cisterns, and for other purposes in connection with the construction of various kinds of buildings. The matter is mentioned by Sir Reginald Blomfield in his book, "A Short History of Renaissance Architecture in England, 1500-1800"; the following is an extract from page 282:—"Leadwork is another of the crafts that has perished partly through the callousness of the professional architect"; and "Lead was extensively used in the sixteenth, seventeenth, and eighteenth centuries for rainwater heads, stackpipes, cisterns and fountains." In the sixteenth century ornamental cast leadwork, gilded or coloured, was used for enrichments to friezes and ceilings, the castings being fixed to the groundwork by screws, in most cases. However, the callousness of the professional architect concerning the artistic merits and the enduring qualities of leadwork has long since passed, and there is now a welcome and extensive revival in the employment of lead for the purposes already mentioned. A number of famous modern architects have helped to bring about the revival in Great Britain; whilst M. Voillet-le-Duc also employed lead for many serviceable and ornamental purposes in connection with the construction of numerous buildings he designed in France.

Pillar Lamp in Cast Lead.

In former times the component parts of lead heads and stackpipes were joined together by means of solder, and leadwork so joined has stood for a number of centuries, and is still perfectly sound at the joints. At the present time, however, an even better method of joining is in vogue, known as lead-burning, which is really the joining of lead to lead by means of the same metal, and without the use of solder; consequently no trace of a lighter coloured metal is to be seen, lead alone being used throughout.

The surface of cast lead has an appearance which, to many people, is pleasing and attractive. In cases where a smooth surface is preferred, milled sheet lead lends itself equally well to artistic treatment.

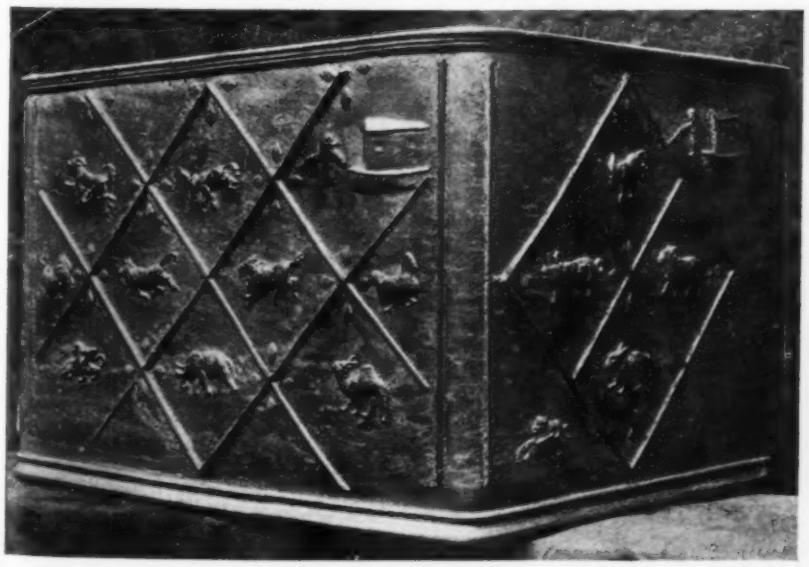
On page 498 a rain-water head with a short length of stackpipe, on which is worked an offset and a suitable end for connecting to a round stackpipe, which, from a certain height, was continued to the ground level in a chase covered by the roughcast of the wall. The 24-inch rule upon the pipe gives an idea of the total length.

Above is a lamp for a stone pillar. The lamp is made of a number of separate pieces of cast lead which have been joined by lead-burning; it is a fine example of the lead-worker's art.

On page 493 is a cast-lead vase which has stood for centuries at a famous old castle. This illustration shows how beautifully the details may be brought out in cast-lead work. A number of these old vases had to be repaired recently, the repairs being of a thorough and lasting nature—an achievement which would have been difficult with vases made of stone or any other material.

On page 493 are two statues of boys, in cast lead, suitable for placing on stone pillars.

In the adjoining columns on this page is a flower box made of cast lead,



A Cast Lead Flower Box.

Lead Frieze for Roof Ornamentation.

Rainwater Head in Cast Lead.

the back and the bottom being burned in. These cast-lead boxes are very suitable for terrace gardens.

Above is shown a cast-lead ornamentation for a terrous roll. Once more attention may be directed to the splendid manner in which the details have been brought out in the casting.

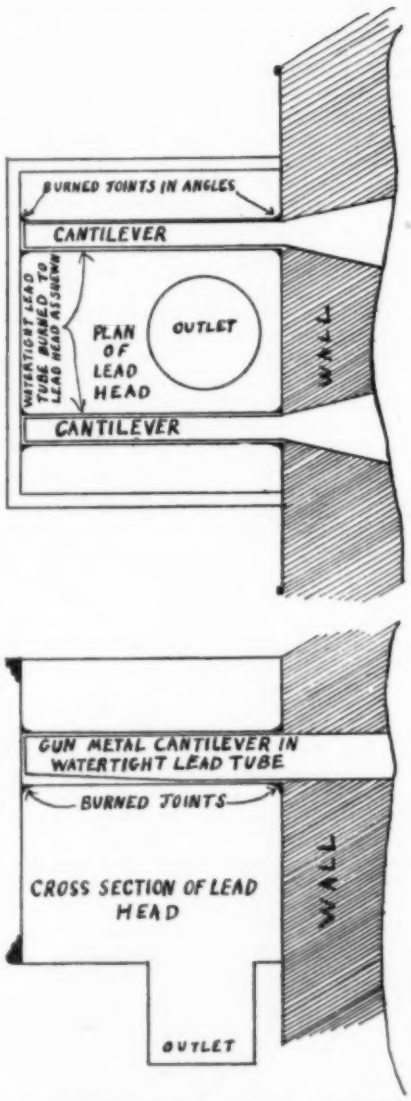
In the rebuilding of Regent-street much leadwork of this kind has been used upon the roofs of a number of the new buildings. By means of cast-lead work an architect may easily arrange so that the pattern of the rain-water heads and stackpipes will harmonise perfectly with the other features of the exterior of his building. Many large lead heads are of considerable weight, and in order that they may be supported with absolute security a method has been introduced by means of which the head is carried upon cantilevers, thereby giving a safety which it would be difficult to obtain by nailing or any other method. The method of fixing is shown on this page.

Many attractive frontages or exteriors which possess considerable artistic merit are rendered somewhat unsightly by a number of pipes being fixed upon them. This is especially the case when soil, waste, and vent pipes are so exposed, as these are of circular shape. Square or rectangular pipes generally harmonise better with the constructional details of exterior brickwork and stonework than do pipes that are circular in section. On several jobs with which the writer has been connected the rain-water pipes have been of square shape and made of cast lead, the soil and waste pipes being of circular drawn-lead pipe. These circular pipes, after being fixed, were covered with an imitation of the square rain-water pipe, the back of the imitation pipes being left out and the sides being turned round at the wall line, about ¾ in. in the direction of the hidden circular pipe, the result being that all the pipes on the exterior of the building appeared to be of square shape.

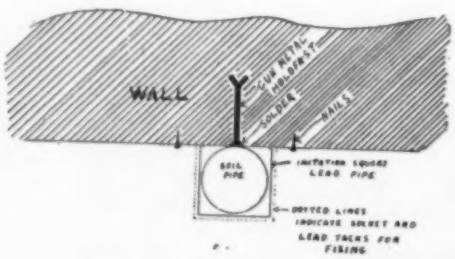
An illustration on this page shows clearly this method of hiding circular pipes.

On page 494 is an illustration of part of the exterior of a house which overlooks Park-lane and Hyde Park. The appearance of the exterior would certainly not have been improved by the appearance of three separate pipes for soil, waste, and vent purposes. A far more pleasing appearance was obtained by fixing the three pipes close together and covering them with a casing made of milled sheet lead. The casing is fixed in lengths, each of which has an imitation socket. As will be seen, the casing has quite an attractive appearance.

The writer expresses his indebtedness to Messrs. Stonor and Saunders, of Paddington, for permission to use the photographs of the rain-water heads, stackpipes, and other cast-lead work.



Plan and Section of a Cast-Lead Head supported on Gunmetal Cantilevers.



Drawn Lead Soil Pipe covered with Square Cast-Lead Casing.

THE RECONDITIONING OF ANCIENT BUILDINGS

A scheme for giving voluntary assistance and expert advice to those about to recondition rural buildings or cottages under the Housing (Rural Workers) Act, 1926, has been devised by the Council for the Preservation of Rural England. It is now under the consideration of the Royal Institute of British Architects. Financial assistance is mainly being applied for under the Act for the improvement of existing accommodation, much of which has a pronounced architectural character and a traditional value which it is of the greatest importance to retain. It is in connection with the reconstruction of such buildings that the scheme for making possible the assistance of well-qualified architects is designed. But as there are cases where such assistance is not easily available, the council have issued a pamphlet laying down certain general rules for guidance. It is pointed out, for example, that in order to retain the good proportions of many cottages, upon which their character and charm largely depend, no attempt should be made to increase the heights or to alter or raise the roofs. On the question of materials it is advised that new materials should be, as far as possible, similar to those previously employed in the old buildings. Where thatches can be obtained, cottages that have once been thatched should have the covering renewed. In the case of stone buildings, where it is not possible to obtain stone slates, green or grey are better than blue slates. In the case of repairing half-timbered cottages, if on account of the cost the new work cannot be carried out in the same style as the old, it is advised that it is better to build in solid walling than to attempt a superficial imitation by means of applying thin deal boards of plaster.

MEETINGS

Saturday, *October* 1.

Institution of Municipal and County Engineers.—North-Eastern District meeting at Shildon, Durham. 2 p.m.

London Society.—Visit to Westminster: The Chapter House—The Chapel of the Pyx—St. Stephen's Hall. 2.15 p.m.

Institution of Municipal and County Engineers.—South-Western District. At Plymouth. 11 a.m.

Monday-Wednesday, *October* 3-5.

Commercial Gas Association.—Sixteenth annual Conference. At Southampton.

Wednesday, *October* 5.

Incorporated Institute of British Decorators.—Mr. W. H. F. Starkey on "Nitro-Cellulose Materials." At Painters' Hall, Little Trinity-lane, E.C. 7.30 p.m.

Thursday-Sunday, *October* 6-9.

Town Planning Institute.—Ninth annual country meeting. At Winchester.

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ILLUSTRATIONS

Manchester Town Hall.
Extension and Library Competition.

We illustrate this week a perspective view of the winning design in this competition, for which Mr. E. Vincent Harris, F.R.I.B.A., is the architect. We hope to publish further drawings, together with a criticism of the competition, in our next issue. Further particulars are given under Competition News, page 494.

New Offices, 2, Devonshire-square, E.C.

The site of these premises, which provide office accommodation for the Imperial Continental Gas Association, runs from Devonshire-square on the north-east to Cavendish Court at the rear, on land which in the 17th century belonged to the Earls of Devonshire. In planning the new building the accommodation to be obtained was limited not only by the irregular shape of the site, but also by the close proximity of the underground railway below, and the difficulties raised as to light and air above. The architect was Mr. W. L. Lucas, F.R.I.B.A., and the consulting engineer was Mr. H. B. Hurst, M.Inst.C.E. Messrs. Highfield and Roger Smith were the consulting engineers for the electric light, and Messrs. Stoner & Son were the quantity surveyors.

Messrs. Trollope and Colls were the building contractors, and they executed all the decorations with their own staff from the architect's detail drawings. The facing bricks are from Messrs. Thos. Lawrence & Son's kilns and Westmoreland green slates cover the roof.

The following were some of the subcontractors:—Powers & Deane Ransomes, Ltd., steelwork; The Kleine Fire-Resisting Floor Co., and Stuarts Granolithic Co., floors; Bassant & Co., parquet floors; The Leyland Birmingham Rubber Co., rubber floors; Waygood-Otis, lifts; Russell & Co., hot water; R. Crittall & Co., panel heating; Rawlings Bros., electric lighting; Dent & Hellyer, sanitation; H. J. Jenkins & Sons, Fenning & Co., Ltd., and H. C. Tanner, marble work, etc.; S. W. Francis & Co., iron shutters.

The Tricity Restaurant, Savoy-hill, Strand.

This restaurant was carried out for the British Electric Transformer Co., Ltd., and occupies the ground floor and basement of previously existing premises. The area available was so limited that, in order to obtain sufficient accommodation for kitchen service, etc., it was necessary to remove the floor between basement and ground floor in the rear of the building, and to form three floors in this space. The restaurant is entered at street level at the top of Savoy-hill. The entrance vestibule leads into a lounge containing cloak room, telephone room, etc., and off which opens the American bar and ground-floor restaurant. From this last a wide staircase leads to the basement where there is a larger restaurant having a spring floor over much of its area for dancing. The rear of the building is occupied by the kitchens, service department, lavatories, etc.

The cooking is done entirely by means of the "Tricity" cookers; no power other than electricity was installed for this purpose. A large independent boiler in the basement supplies hot water for dish washing and lavatory basins, and provides heat for warming the air in connection with the ventilating scheme.

The whole of the decorations and lighting effects were designed by the architects. The walls and ceilings of the ground floor (excepting the American bar) are coated with "stuc" of a natural stone colour, the ornament being dull grit, except the flower and fruit drops, which are painted in bright colours. The doors are in mahogany, stained very dark brown. The vestibule and lounge are treated similarly, the former having a rough surface gilded dome, illuminated by concealed cornice lighting. The American bar is carried out in a different style, wall panelling, counter and specially designed bar fittings being in oak. The ceiling is barrelled and has low relief plaster decorations and is painted a parchment colour. The staircase to the basement is in teak, with a small amount of gilded ornament.

The walls and ceilings of the basement restaurant are finished in Keene's cement, and painted a warm honey colour. The walls are divided into bays by flat pilasters, each bay having a panel formed with a band of Pompeian red, upon which are applied ornamental pateræ. The caps of pilasters, pateræ and ornament generally are treated in a low tone of gold. The basement is lit entirely by artificial light, an effect of sunlight being obtained by means of a large number of wall lights shaded with yellow silk, no direct lighting being employed. The "Tricity" "Sun Ray" radiators are installed throughout. These give at the same time heat and glowing light.

The architects are Messrs. Imrie and Angell, F. and L.R.I.B.A.

The general contractors were Messrs. F. G. Minter, Ltd., and the following were subcontractors:—G. Jackson & Sons, Ltd., plaster decoration and colour decoration; Francis Morton, Junr., & Co., spring floor; Bassant's Parquet Floor Co., Ltd., strip oak floor; J. P. White, fire-resisting doors; Sturtevant Engineering Co., Ltd., ventilation; Lafontaine Bros., bar and kitchen fittings, etc.; Young & Co., steelwork; Hickman, Ltd, bronze canopy; Samuel Haskins, bronze work; Lightfoot Refrigeration Co., Ltd., refrigeration; H. Pontifex & Sons, Ltd., sanitary fittings; British Electric Transformer Co.,Ltd., electrical equipment; H. Carter and Co., Ltd., and Art Pavements and Decorations, Ltd., tiling; F. G. Minter (Decorations), Ltd., upholstery; Boro' Electric Signs, electric signs; James Ritchie & Sons, lifts; Edison Swan Electric Co., Ltd., electrical fittings; British Electric Transformer Co., Ltd., electrical cookers, etc.; Fenning & Co., Ltd., marble floor; Luxfer Prism Syndicate, Ltd., fire-resisting glass; Synchronone Co., Ltd., clocks.

House at Saltwood, near Hythe.

This house, completed in 1926, stands on high ground overlooking the English Channel. The brickwork is of varying colour of purple and grey, with slight emphasis in quoins and diaper work. The owner of the house was a retired clergyman, and this suggested the layout of the garden below the house, which was in the form of a church plan with nave, aisles, transepts, and apsidal chancel. There are five bedrooms on the first floor and two bedrooms and a large studio on the second. The general contractors were Messrs. F. S. Longly & Sons, of Hythe; the only sub-contractors being Messrs. Pither's, of Mortimer-street, W., who carried out the central and domestic heating.

The architects were Messrs. Baillie Scott and Beresford.

EXHIBITION NOTES

Arlington Gallery.

The collection of travel sketches in Australia and elsewhere, by Mrs. J. Thornton Tweddle, exhibited in this gallery, though slight—in execution, show observation, and are of a certain vividness of realisation, and the pastel and oil medium in which they are painted is used skilfully. Such sketches do not call for extended notice, being more the pleasant record of travel than works of art. Some of the best among them are those in which effects of atmosphere are recorded, such as Nos. 14, 37 and 73. There is hardly a hint beyond what the ordinary traveller to such places would see for himself, and the supply of such sketches is inexhaustible. But of their kind we can commend the artist's capacity to get broad effects and to use her materials deftly. Nos 9, 15, 43, 77 and 80 are among the best.

The St. George's Gallery.

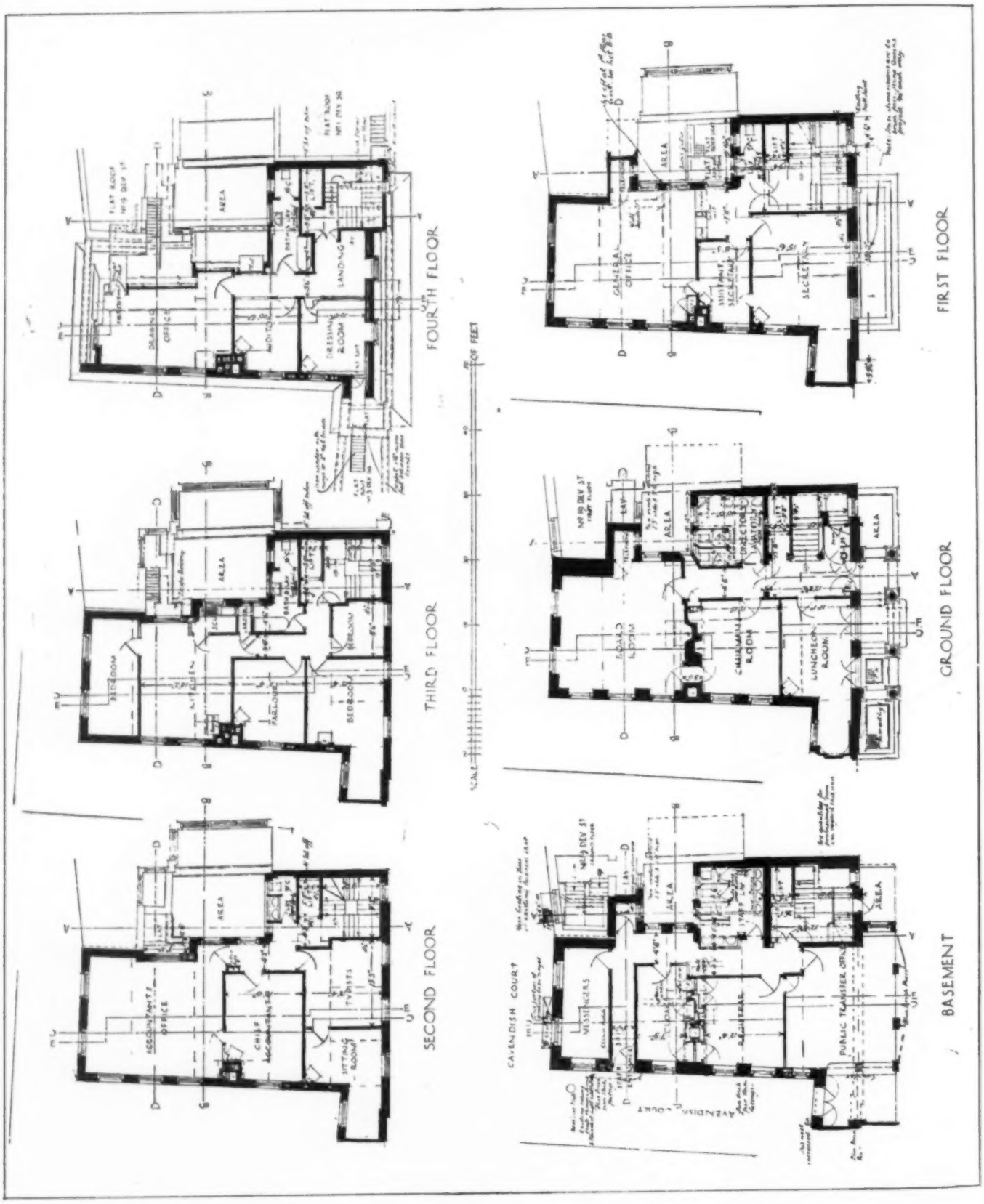
There is a freshness of observation and freedom of treatment in the pictures (water colours) shown by the three artists contributing to this exhibition. Executed in light and cool colour, lyrical rather than dramatic in their point of view, they have a certain withdrawn and intimate character very full of suggestion. Such pictures would well adorn the domestic interior and should be sought after by picture lovers. Nor is it quite fair because these artists approach their work in a temper similar to that of Paul Nash to regard it as derivative only, the truth being that it grows out of the same soil of modern outlook, and is otherwise quite itself. There is some misapprehension in burdening ourselves with the notion that such work is the outcome of "modernity." On the contrary in the singularly real and intuitively guided expression of these artists there is more to associate with the early spring of mediæval art. The three artists concerned, Eric Ravilious, Douglas Percy Bliss, and Edward Bawden, have each their own outlook, and work through the teratment which may best express it. In either case it is all very simple, and the picture is regarded, at no loss to the quality of nature, which should inform a work of art. Nos. 7, 9, 10, among others in various ways attractive, should be noticed. The realism is in the vision of what the artist sees, which is the proper field of craftsmanship, and gives that lyrical quality, where observation and treatment are harmoniously embodied. This is in itself a challenge to those who expect of the artist to record what they see in nature, which the picture postcard will do better for them.

In the water colours by Percy Bliss, there is real beauty. These Irish scenes impress us with a certain intimacy, which charms us into sharing the delight in that which is to the artist so delightful. Nos. 19, 20, 26, 28, 29 are perhaps among the best examples. Given the opportunity we can imagine this artist succeeding well in the larger field of mural decoration, the simple treatment and restrained colour and composition being well suited to it. Mr. Edward Bawden is more unequal, and there is less to commend in the drawings on white paper than in his etchings and design work. The latter "Drawings of Imaginary Architecture," Nos. 63, 65 and 67, are as charming as anything in the exhibition. Full of fancy and of a quaintly conceived richness of detail they are worth careful examination. This artist's work in publicity directions will be recalled.

This very attractive exhibition, full of youth and seriousness, should be of interest to many, and visited by those who can appreciate the charm of drawings showing seriousness and fine feeling for beauty.

New Bournemouth Cinema.

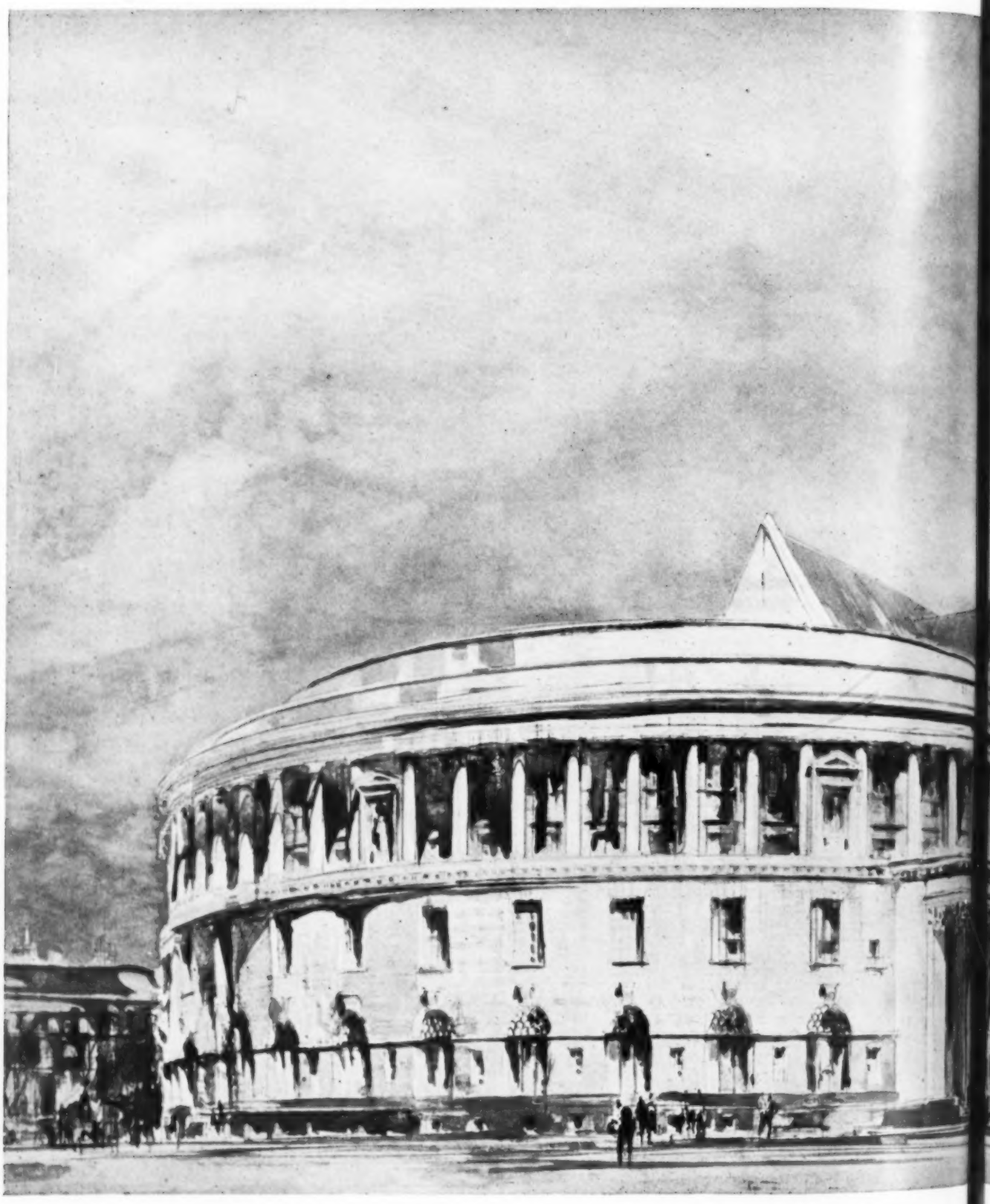
Messrs. Seal and Hardy, of Bournemouth, have been appointed architects for the proposed erection of a cinema by the Provincial Cinematograph Theatres, Ltd., in the Westover-road, close by the Westover Cinema and Ballroom. It is stated that the new building will include a stage adequate to any theatrical production, and will be built to seat 2,500 people. The cost is estimated at £150,000.



New Offices, No. 2, Devonshire Square, E.C.
MR. W. L. LUCAS, F.R.I.B.A., Architect.

Mr. W. L. Lucas, F.R.I.B.A., Architect.

UNIV. OF MICH.



Manchester Town Hall Extension and

Mr. E. VINCENT

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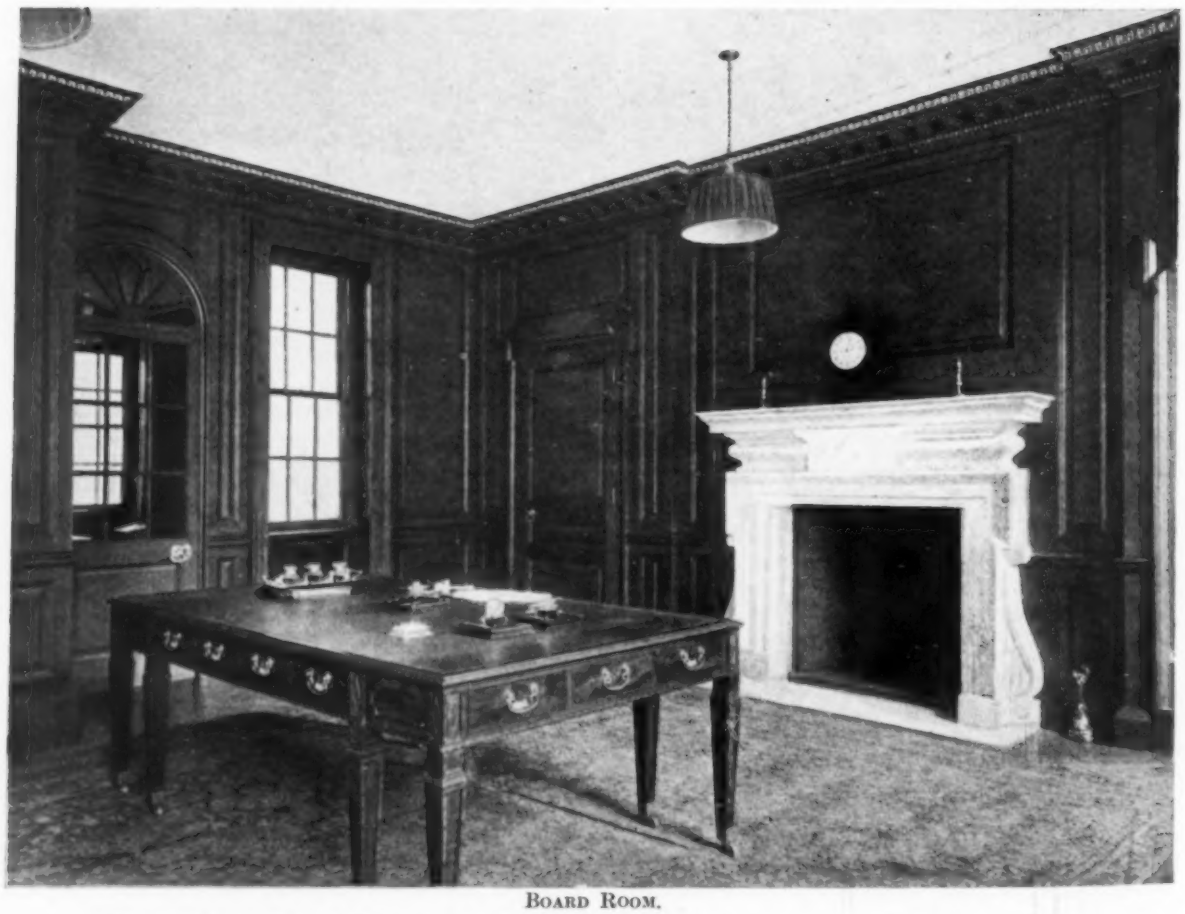
ibrary Competition : Winning Design.

I.B.A., Architect.

STAIRCASE.



BOARD ROOM.

New Offices, No. 2, Devonshire Square, E.C. MR. W. L. LUCAS, F.R.I.B.A., Architect.

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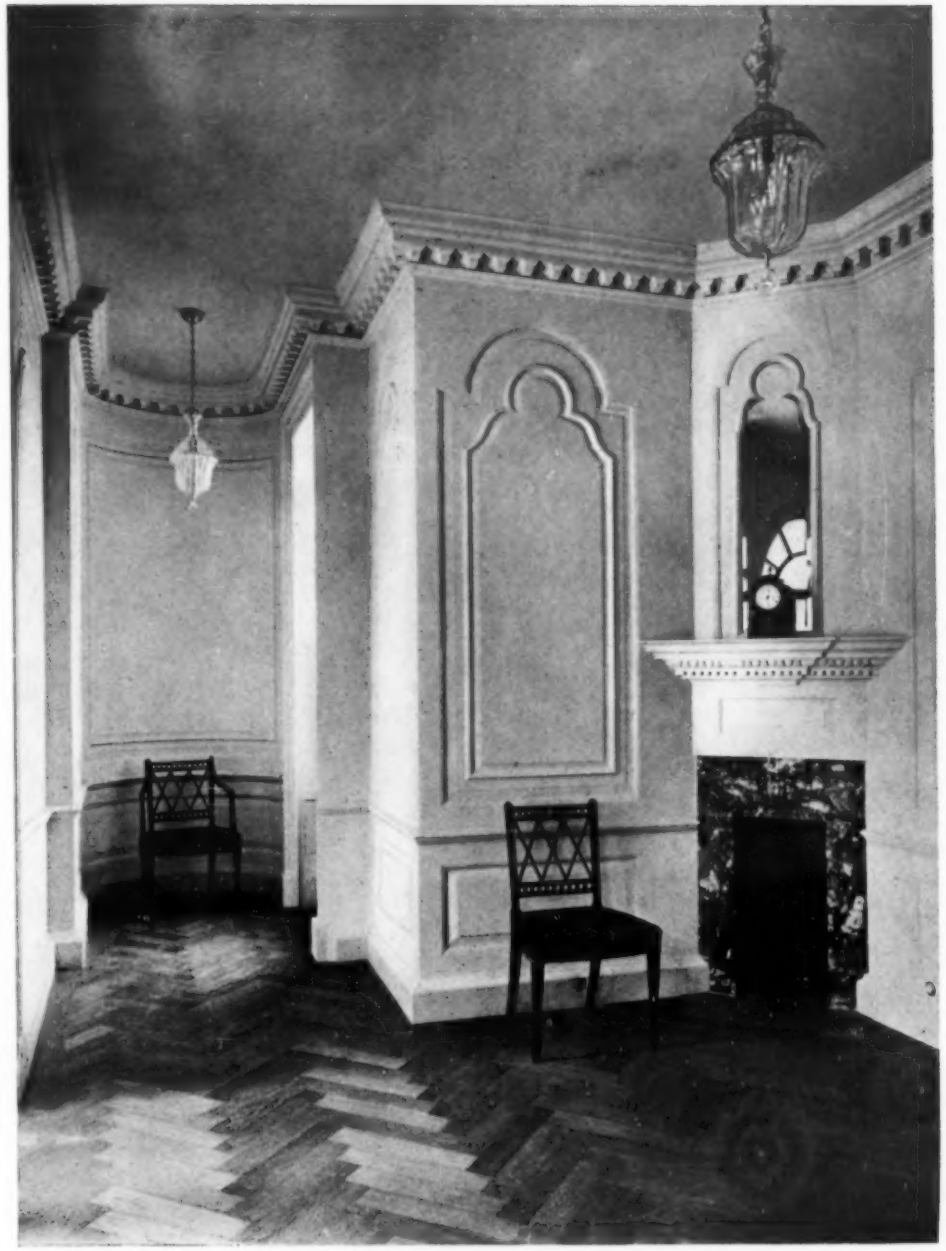
CHAIRMAN'S ROOM.

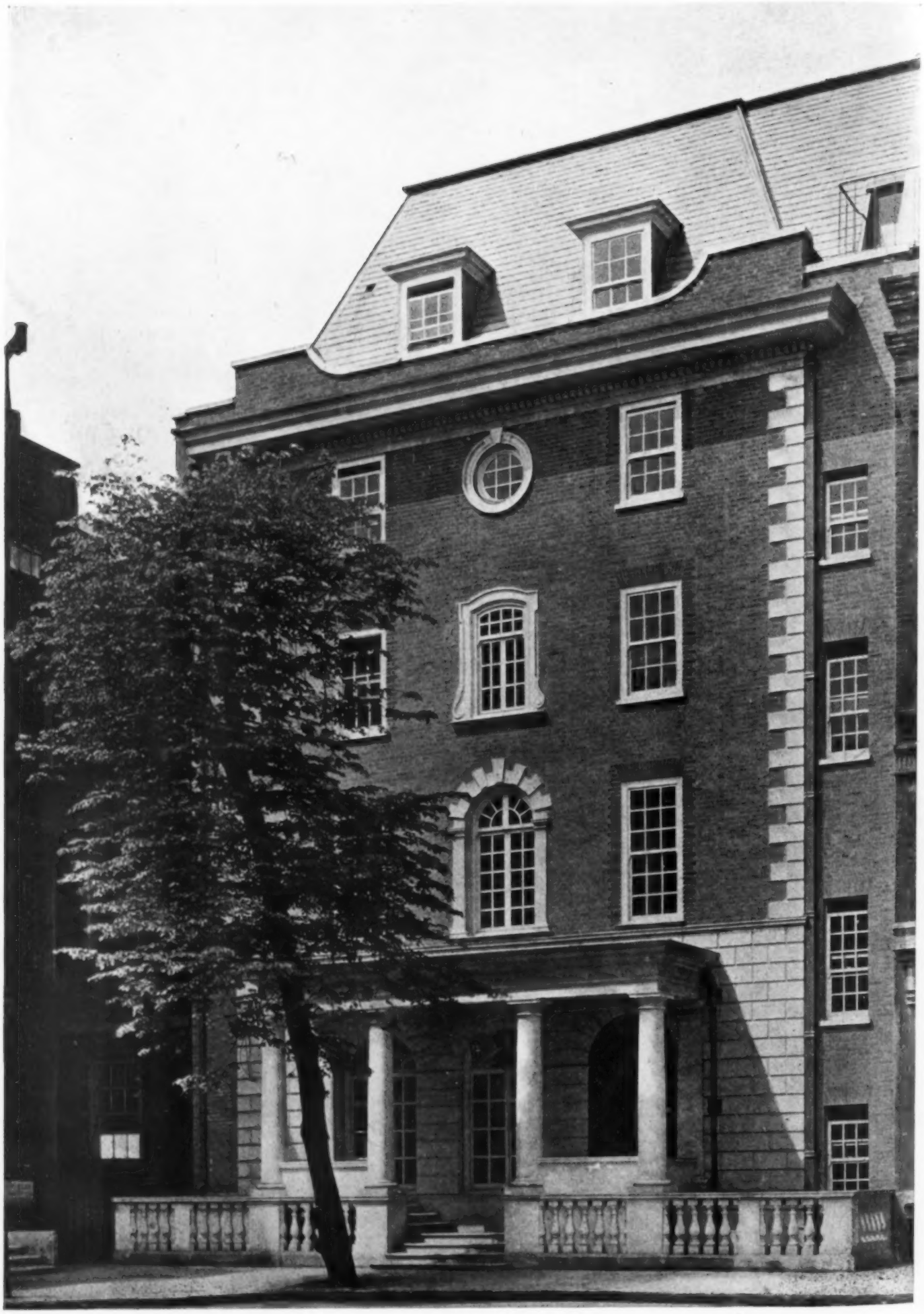


LUNCHEON ROOM.

New Offices, No. 2, Devonshire Square, E.C. MR. W. L. LUCAS, F.R.I.B.A., Architect.

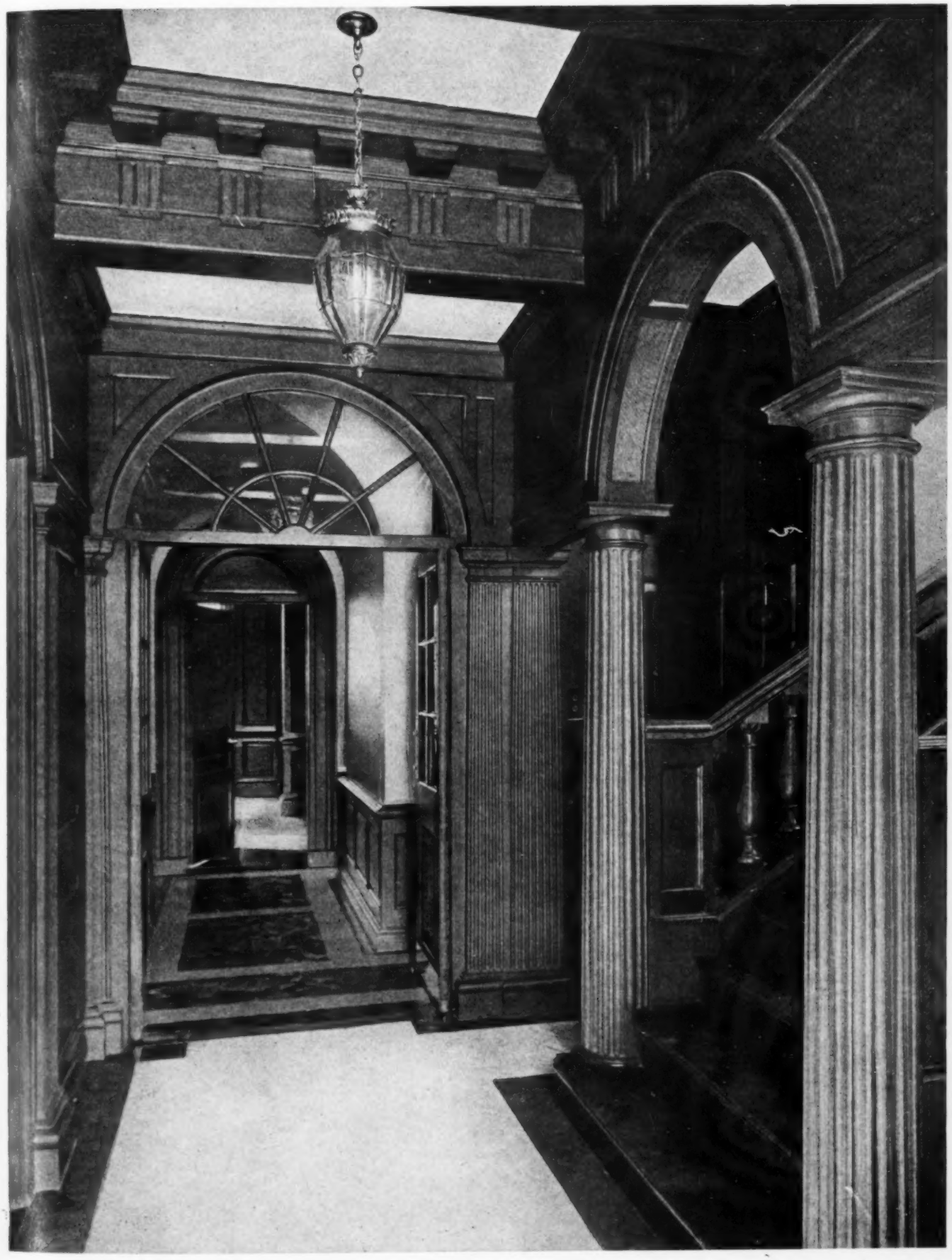
New Offices, No. 2, Devonshire Square, E.C. Mr. W. L. Lucas, F.R.I.B.A., Architect.

UNIV. OF MICH.



New Offices, No. 2, Devonshire Square, E.C.: General View of Exterior.

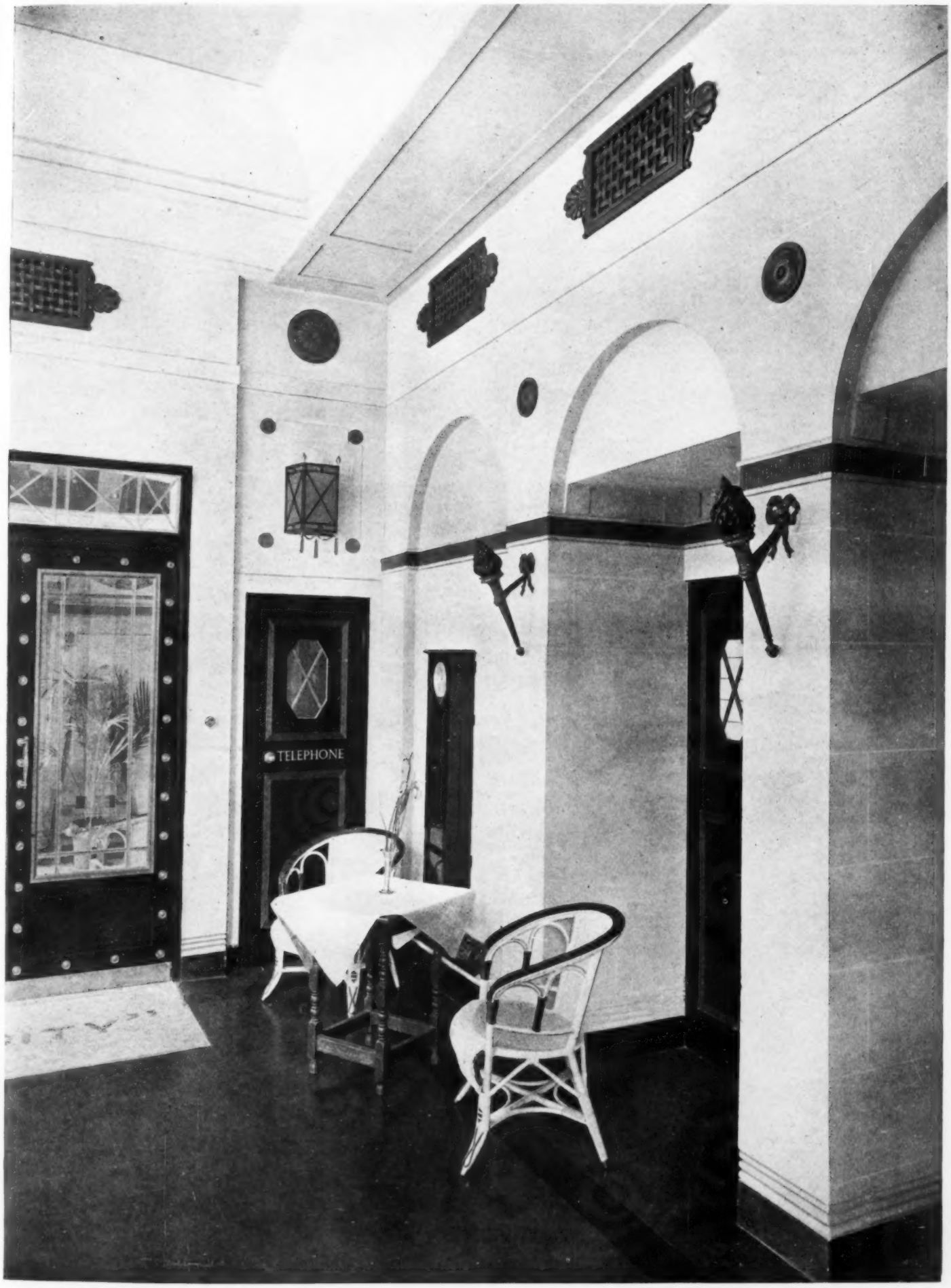
MR. W. L. LUCAS, F.R.I.B.A., Architect.



New Offices, No. 2, Devonshire Square, E.C.: Entrance Hall and Corridor.

MR. W. L. LUCAS, F.R.I.B.A., Architect.

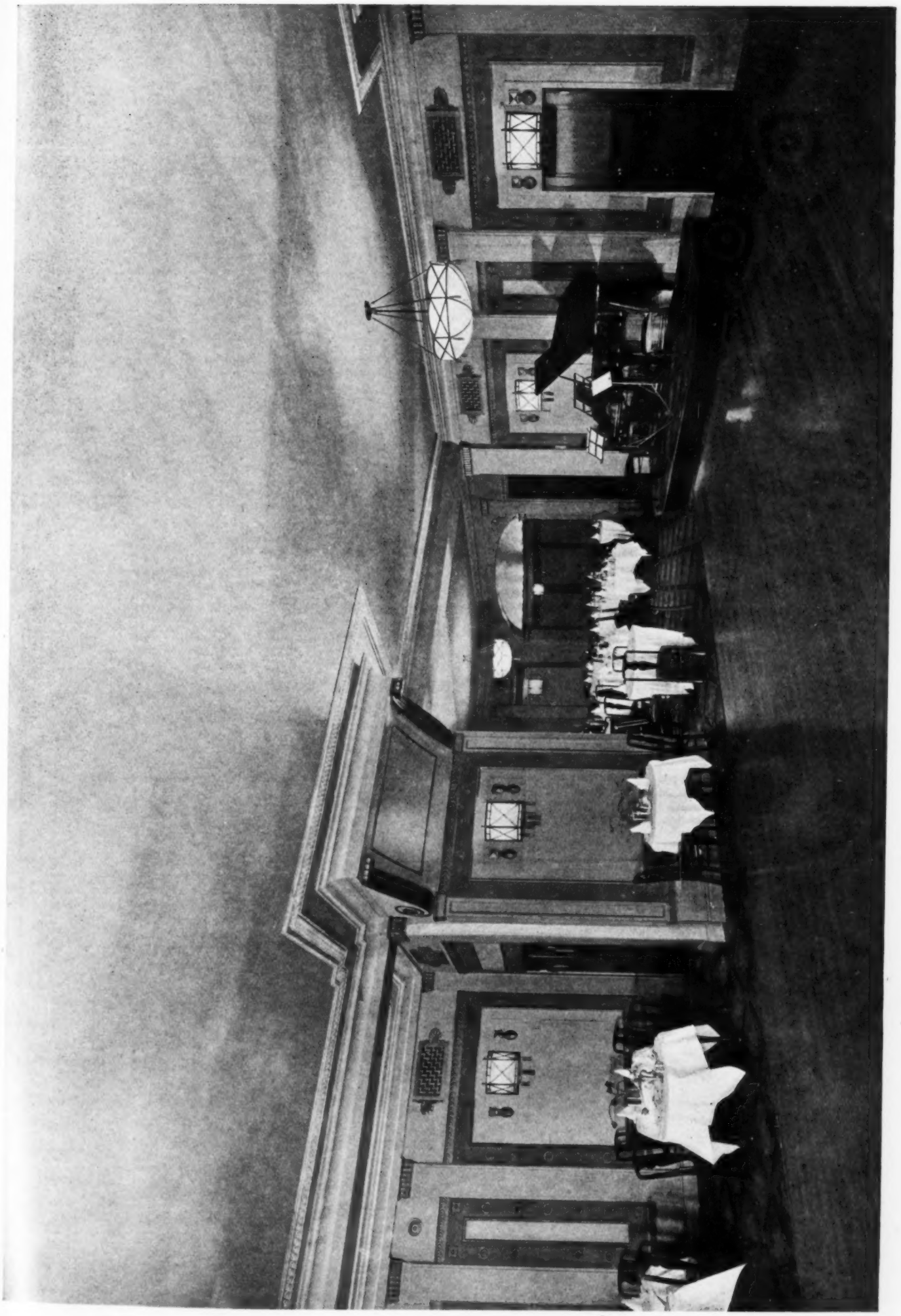
UNIV. OF MICH.



The Tricity Restaurant, Savoy Hill, Strand, W.C: Corner of the Lounge.

MESSRS. IMRIE & ANGELL, F. and L.R.I.B.A., Architects.

UNIV. OF MICH.



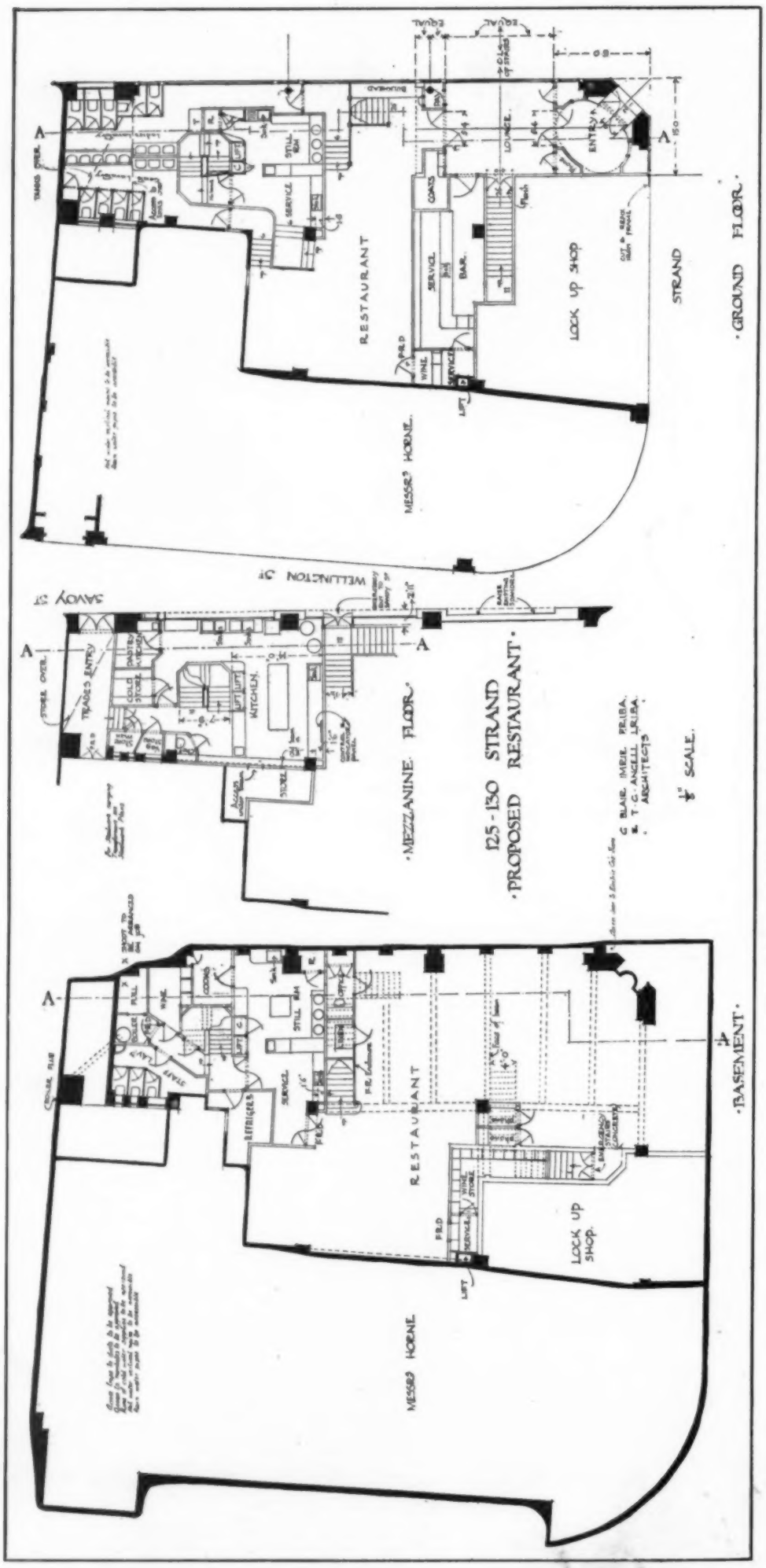
The Tricity Restaurant, Savoy Hill, Strand, W.C. : The Pompeian Restaurant, in Basement.

Messrs. Imrie & Angell, F. and L.R.I.B.A., Architects.

UNIV. OF MICH.

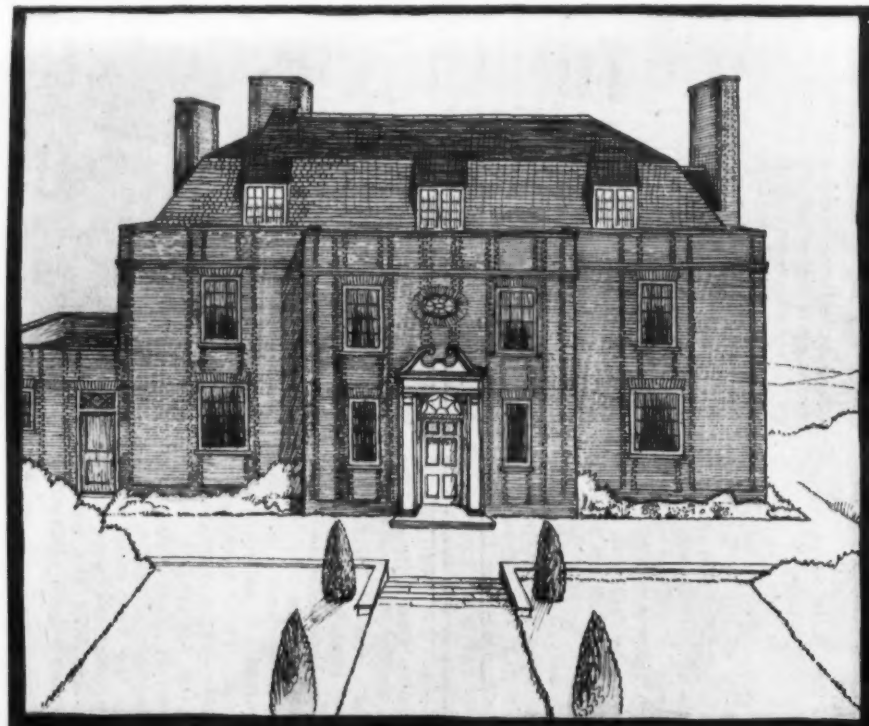
The Tricity Restaurant, Savoy Hill, Strand, W.C.: the Restaurant, Ground Floor.

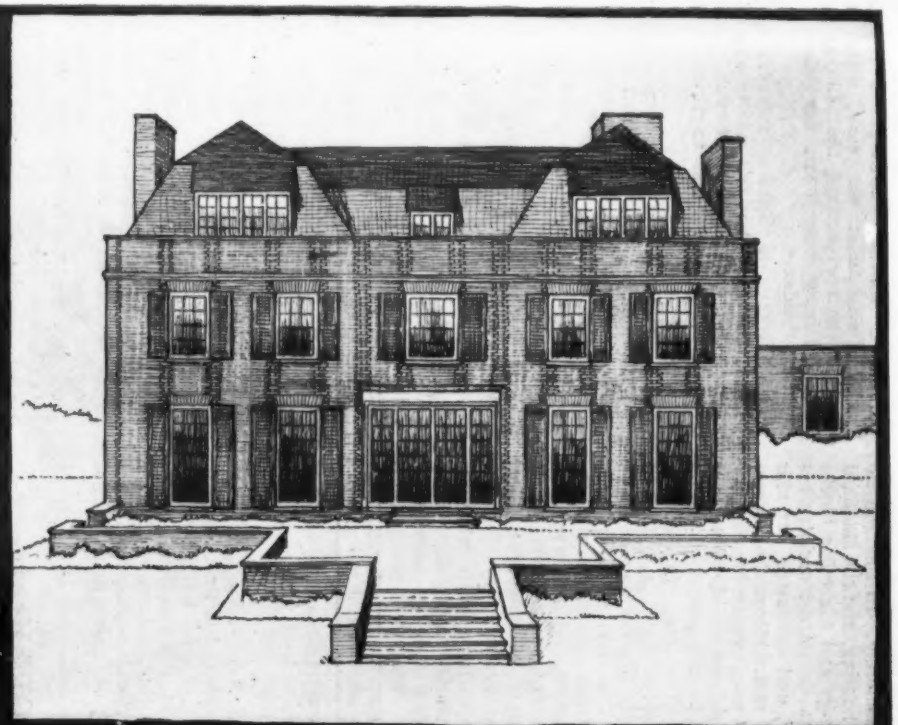
MESSRS. IMRIE & ANGELL, F. and L.R.I.B.A., Architects.

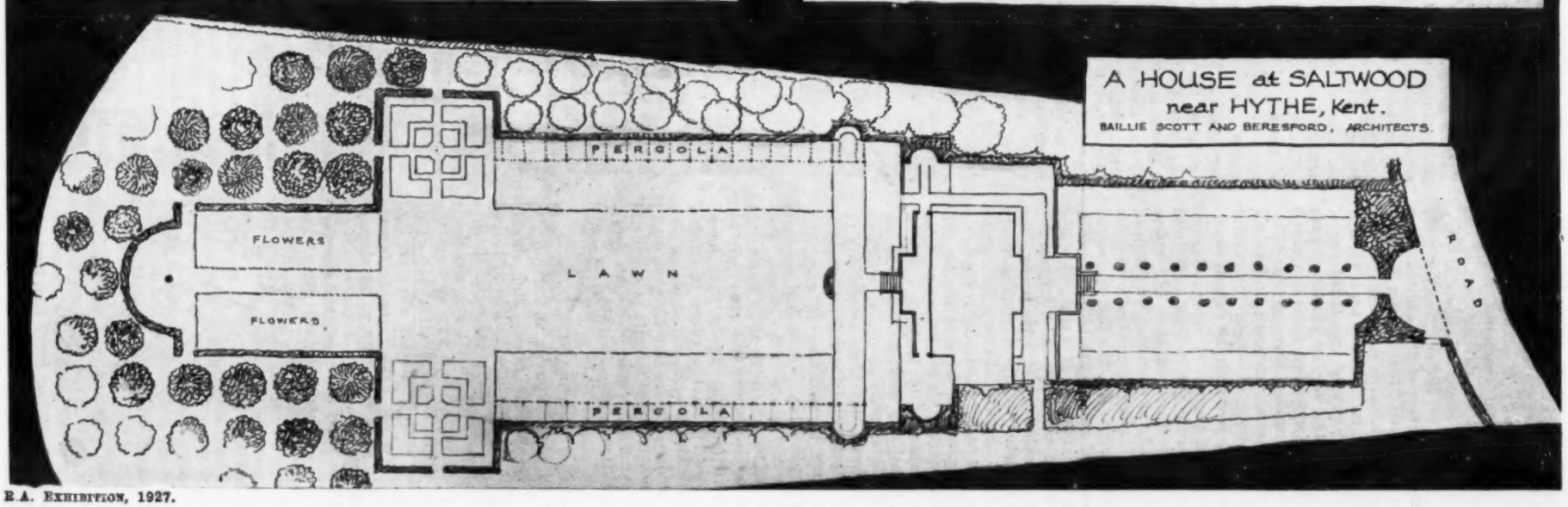


The Tricity Restaurant, Savoy Hill, Strand, W.C.

Messrs. Imrie & Angell, F. and L.R.I.B.A., Architects.







R.A. EXHIBITION, 1927.

House at Saltwood, near Hythe.

MESSRS. BA'LL'E SCOTT & BERESFORD, Architects.

ARCHITECTURE OF TO-DAY

In the course of an address on this subject to the Southend Society of Architects, Mr. Howard Robertson, F.R.I.B.A., S.A.D.G., Principal of the Architectural Association Schools, said the history of architecture was a series of actions and reactions, reflecting social movements and the development of the religious and moral sense. Grecian artistry and purity yielded to Roman magnificence, and to the subordination of the individual in architecture; and then Mediævalism brought a powerful reaction towards independence and energetic individualism. This, in turn, yielded to the intellectual sway of the Renaissance, and then, in turn, the various phases of past history re-echoed themselves in revivals and free movements, passing through the Victorian age of material prosperity and culminating in the chaos of which in another direction the Great War was the expression.

To-day was the period of reorganisation. Architecture strove to-day to free itself from habit, though not from tradition. It strove to develop logically, as tradition was logical, for tradition was the background of evolution. A return to fundamentals, the full utilisation of our mechanical and engineering resources, and the logical solution of each individual building problem were typically present-day aims. The marshalling of resources, the thorough examination of the conditions which we built to meet, required a talent for organisation. The best architects to-day were in the highest sense organisers, for architecture consisted to a large extent in the proper organisation of the materials of building, such as bricks and stone and concrete, and the elements of buildings, such as doors, windows, roofs, wall surfaces, and their assembling for a purpose of practical use and civic beauty.

The architect's biggest task in organising was in town planning, where his elements were buildings and blocks of buildings. Few towns were well organised in their parts; the effort of the town planner was only just beginning. Town planning sprang from necessity, as was shown by the effort to control and plan such cities of apparent chaos as New York. In London, streets like Kingsway had been consciously schemed as part of a general plan. Even our traffic merry-go-rounds represented organisation and logic applied to traffic planning.

In the form of individual buildings, there was a reaction towards order and simplicity. In the reaction against cheap and shoddy ornamentation, the machine had been looked to as an inspiration. The great metal bridges and the metal roofs of vast machinery halls were as expressive in their way as were the vaults of a great Gothic cathedral. This clean and spare architecture of structure had lightness and beauty of form. Architects were learning to use their structure as an element of beauty and not to attempt disguises. Some of the recent factories in France and Germany and this country showed the nobility of bare structures. Even the great Canadian grain silos had an impressive beauty of form. But structure alone was insufficient. Human beings required the element of humanity in their surroundings, something to gladden the heart and eye. That was why decoration and ornament would never die out, and why the cubist experiments of the Continent could not be considered as at all final as an architectural expression.

In France and Germany, and other parts of the Continent, there were being built houses of steel and concrete with metal doors and windows, and an interior finish like that of a modern hospital. The aim was two-fold: To build economically, with standard units; and to provide a maximum of light and air, hygiene and ease of upkeep. These houses did not correspond to English ideals, but they represented an enormous advance, both practically and æsthetically, over the previous poor man's housing.

In England the standard of housing had always been much higher than on the Continent, so the same need for a radical departure had not been felt. But we had still much to learn in economic building, in preparing as much as possible of the house under cover in the shop and yard, and only using labour on the site for rapid assembling. In England we were pre-eminent in housing, and the standard of our public buildings and big office blocks was improving. But our street architecture was often very poor, and commerce was still loth to erect refined and distinguished shops, restaurants and cinemas, largely because the popular taste was not educated to it, and the majority of people still preferred gilt on their gingerbread. The only fundamental remedy was to educate the public taste, and to improve continually the training of architects. The trouble here lay, however, with those so-called architects who had no training in the art of architecture, but who were able to put up buildings—which was one of the grave disadvantages of an unguarded profession.

One of our great architectural opportunities lay with the new arterial roads, which were unfortunately being marred by ramshackle speculative building, instead of being lined with houses considered as a scheme, with broad simple fronts and continuous gardens fit to harmonise with these fine sweeps of boulevard. America did differently, and her suburban architecture was of a finer quality than ours.

(The lecturer showed numerous slides from England, the United States and the Continent, illustrating examples of bad buildings, and showing the cause of the reaction towards modern simplicity, including some of the fine examples of architectural engineering which showed the possibility of modern materials and structure.)

THE CORNHILL SUBSIDENCE

The Corporation of the City of London says the *Times*) met on Thursday, September 22, for the first time since the vacation, under the Presidency of the Lord Mayor.

Mr. H. Dignam Baily, Chairman of the Streets Committee, replying to questions as to the present state of affairs in Cornhill, said that if the restoration of the roadway proceeded at its present rate it was likely that half the roadway would be open to public use in four or five weeks' time. Referring to the accident, he said that Lloyds Bank, in the course of their rebuilding cheme, prepared to take their building a considerable depth below the surface in order to provide basements. They went down as much as 50 ft. The premises of the Commercial Union Assurance Company did not go down so far and had to be underpinned. The roadway was kept up by timbering. That was the position on August 6. The piers underpinning the Commercial Union's building gave way, part of the structure fell, and in its fall the stone, brick, and steel work knocked against the timbering holding up the side of the road, and the earth slid down into the pit. There was a brick sewer under the road, and, being unsupported, it collapsed and added to the confusion. There were various mains—gas and water—which were in a similar condition, and underneath in the cavity were festoons of Post Office and other cables. The City Engineer (Mr. Finch) dammed up the two ends of the sewer and other precautions were taken. The concrete foundations of the roadway held up in a remarkable way. Dangerous structure notices were served on Lloyds Bank and the Commercial Union in the ordinary way after the subsidence. The Town Clerk wrote a letter to say that the Corporation would hold Lloyds Bank entirely responsible for all the damage that was done and would be done, and a similar letter was sent to the Commercial Union. No harm happened to the Royal Exchange, and the steps which had been taken by the contractors to Lloyds Bank had made the roadway temporarily secure. A scheme which Lloyds Bank had made in consultation with their experts provided for the proper restoration of the roadway, and that had been approved by the engineer and the Streets Committee. Throughout the Corporation had taken the view, which they thought the correct one, that Lloyds Bank were entirely responsible for the unfortunate subsidence.

Sir William H. Thomas, intervening, expressed the view that the matter was being carried too far. Litigation was pending, and he protested against anything further being said.

Mr. Baily: I am only expressing my opinion that in the end the bank will carry out its responsibilities.

OBITUARY

Mr. M. H. Young, F.S.I.

We regret to record the death, on August 31, at the hospital of St. John and St. Elizabeth, Grove End-road, of Mr. Morgan Henry Young, F.S.I., in his 75th year. Mr. Young was educated at Tonbridge School, and was articled to the late Mr. Sidney Young, a well-known quantity surveyor. He was concerned as quantity surveyor for most of the hospital work carried out by his brother, Mr. Keith D. Young, F.R.I.B.A., and his partner the late Henry Hall. Amongst these were the Derbyshire Royal Infirmary; extensive reconstruction and additions to the Middlesex Hospital, including a convalescent home at Clacton-on-Sea; reconstruction and additions to the London Fever Hospital, the Royal Eye Hospital, the Royal London Ophthalmic Hospital, the Hospital for Epilepsy and Paralysis, Chelsea Hospital for Women, and the British Hospital for Mothers and Babies, with many others; for the late Sir William Emerson he took out quantities for the Queen Victoria Memorial at Calcutta, besides other works, and he was associated with several other well-known architects. He was for many years an active member of the Court of the Armourers and Brasiers Commpany, and thrice served the office of Master: was a manager of the Schools of St. Augustine's, Kilburn, and Chairman of the Committee of the St. Monica's Home Hospital for Sick Children at Brondesbury.

Traffic Congestion at Exeter.

A scheme for dealing with traffic congestion in the streets of Exeter, involving an expenditure of £350,000, came before the City Council for the third time on Tuesday night. The question was under discussion by the council last week, and when the meeting was adjourned a motion to reject the scheme had been moved, and also an amendment to defer it till next June.

Mr. Vincent Thompson resumed the discussion on Tuesday night on the amendment. He said that the city was not pledged to the expenditure of one farthing, and that at every stage of the execution of the scheme there would be opportunity for review. He warned the council that the Ministry of Transport were anxious to carry their pet arterial road—the Bath-road—through Exeter to Plymouth, and if the council did not proceed with the proposed scheme, or some similar one, the Ministry would be driven to construct the deviation. That would cost Exeter nothing, but it would also bring it in nothing. Mr. F. E. Cottey contended that a vote for the amendment would virtually be a vote in favour of the scheme as it stood.

The amendment was defeated by 36 votes to 23, as was a further amendment that the original resolution should be rescinded and that the scheme should be referred back for consideration and report. Following further discussion, the motion for the rejection of the scheme was carried by 49 votes to eight. The scheme is therefore dropped.

THE LONDON BUILDING ACTS AND THEIR APPLICATION—XXIX

BY H. V. MILNES EMERSON, A.R.I.B.A.

PART XIV.—BY-LAWS.

SECTION 164.—(1) Subject to the provision of this Act the Council may make such by-laws not repugnant or contrary to the provisions of this Act as they may think expedient for the better carrying into effect the objects and powers of this Act with respect to the following matters :—

The regulations of the plans, level, width, surface and inclination of new streets and for regulating the plans and level of sites for new buildings.

Note.—The by-laws relating to new streets were given when dealing with Part II., Sections 6 to 21 inclusive; Part IV., Sections 32 to 38 inclusive. Section 49 limits the heights of buildings in certain cases in relation to the width of the street. Section 199 relates to obstructions in streets. Section 213 relates to powers of local authorities with respect to the paving of new streets.

The Metropolis Management Act, 1855, Section 105, provides for paving new streets as follows :—In case the owners of the houses forming the greater part of any new street laid out or made or hereafter to be laid out or made, which is not paved to the satisfaction of the vestry or district board of the parish. . . . or if the vestry or board deem it necessary that the same shall be so paved then and in either of such cases such vestry or board shall well and sufficiently pave the same, either throughout the whole breadth of the carriageway and footpaths thereof, or any part of such part of such breadth, and from time to time keep such pavement in good and sufficient repair. The remaining part of the section deals with the liability of owners to pay their share of the cost of making up the roads and footpaths.

The Metropolis Management Amendment Act, 1862, gives power under Section 73 to the local authorities to pave, improve and regulate the streets of the Metropolis and is an extension of The General Paving (Metropolis) Act, 1817, and the Metropolis Management Act, 1855. Section 77 of the 1862 Act is as follows :—Where any vestry . . . have paved or be about to pave any new street the owners of the land bounding or abutting on such street shall be liable to contribute to the expenses or estimated expenses of paving the same as well as the owners of houses therein. . . . and any such costs or expenses, including the cost of paving at the points of intersection of streets, and all other incidental costs and charges shall be apportioned by the vestry or board, and shall be recoverable either before the work shall be commenced, or during its progress, or after its completion: and it shall be lawful for the vestry or district board at their discretion to accept payment of the amount apportioned or charged in respect of each house or premises before instalments spread over a period not exceeding 20 years, and any such amount shall be recoverable from the present or any future owner of the premises in a summary manner, etc.

The Metropolis Management Act, 1862, Amendment Act, 1890, Section 1 gives power to the local authorities to pave footway and to recover the cost of same from the owners of the houses or land bounding or abutting on the road or street in which such footway is situate.

Note.—It will be seen that the local authorities and not the L.C.C. have the power to determine how and with what materials the roadway and footways shall be made. This means that the decision practically rests with the Borough Engineer or Road Surveyor, and there is nothing in the various Acts dealing with this matter restricting the making or cost of new roads. Hence it is possible to find in adjoining localities different standards for road making, one reasonable in construction and costs, the other extravagant and costly in construction.

The cost of new roads and paving in London varies from 30s. to 50s. or more per foot run and the payment by the owners to the local authorities can be on demand or by extended payments, the latter generally over a period of five years, although up to 20 years is provided in the Act. It has been felt that the heavy road charges press unduly upon the owners of new property and it has been suggested that when the London Building Act is revised the charge to the owners of property on new roads should not exceed £1 per foot frontage and 10s. per foot return frontage to corner property. Another suggestion in dealing with return frontage is to charge an amount for the return frontage equal to the average frontage of the houses in that street; thus if the average frontage per house is 30 ft. then the return frontage of the corner house would be charged at 30 feet full rate and no more. The method of apportionment cannot be questioned before the magistrate in proceedings to enforce payment of the amount.—Stotesbury *v.* The Vestry of St. Giles', Camberwell, 59, L.T. 473.

Under Section 77 of the 1855 Act existing or ancient highways may become new streets within the meaning of this section. The Vestry of St. Giles', Camberwell *v.* Crystal Palace Co. (1892), 66 L.T. 840.)

The interpretation of the term street will be found under section 250 of the Metropolis Management Act, 1855, and the term new street is defined in Section 112 of the Metropolis Management Amendment Act, 1862, as follows :—"New Street" shall apply to and include all streets hereinafter to be formed or laid out, and a part of any such street, and also all streets, the maintenance of the paving and roadway whereof had not, previously to the passing of this Act, been taken into charge and assumed by the authorities, etc.

ARCHITECTS' & BUILDERS' INQUIRY BUREAU

We are glad to give questions and answers, but cannot accept responsibility for contributed replies, especially on legal matters.

May we appeal to our correspondents to submit their queries on paper of a size easily filed, and written as legibly as possible, or, better still, in typewriting?—ED.

Growth in Lime.

[REPLY TO "O. P. Q.," SEPTEMBER 23.]

SIR,—If the lime-whited walls vegetate, it is a sign that they are more or less permanently damp, and the cause should be traced and corrected. If this is the porous character of the walling, it would probably be found effective if the lime were scraped off and two coats of white cement wash substituted.

CUREIR.

Floor Surface for Printing Works.

[REPLY TO "NEW BUILDING," SEPTEMBER 23.]

SIR,—A lasting floor is granolithic, laid to a good thickness of at least 1½ in. by a good specialist firm. It is dustless and practically everlasting, and can be swilled down in a way that few other floors will stand.

OLD-FASHIONED.

Loan for Water Scheme.

SIR,—A local Public Water Supply Committee are desirous of borrowing a sum to carry out a scheme in connection with the construction of a new water reservoir. I am in doubt as to which body is likely to grant them such a loan, so would be glad if you would kindly assist me in the matter with regard to the following queries :—

(a) Would the Ministry of Health grant them a loan for this purpose?

(b) Would the Public Works Commissioners grant the loan?

(c) If neither of the above bodies will grant the loan, to whom should I advise them to apply?

AQUA.

[To give a proper reply to the question asked, it must first be made clear what is the nature of the undertaking. Is the public water supply the property of the local authority, or is it owned by a public or private company? Whichever it is, presumably powers already exist for the undertaking and the construction of a new water reservoir. If it is the local authority that has the powers, then, in general, it can borrow the amount of capital to be spent either by mortgage or by loan under the Public Works Loans Act, 1925, raised by debentures, debenture stock, or annuity certificates, or by stock issued under a private Act or other statutes, and the loan may be obtained at a fixed rate of interest from the Public Works Loan Commissioners under the Act of 1925, repayment being on the annuity system, or the sinking or redemption fund system, over a period of 30 years, sanction of the loan first being obtained from the Ministry of Health. If a company, then it may borrow in such manner as it thinks fit—for instance, by a legal mortgage of any of its property, or by equitable mortgage, as by deposit of title deeds; or again, by a floating charge on the whole undertaking, or by bonds, or promissory notes, or by debenture or debenture stock. It may also borrow by overdrawing its banking account. For such a small amount, no doubt 5 per cent. interest would be charged.—ED.]

Building Line.

SIR,—On an estate on which I am proposing to build, the building line in the street is determined in an unusual manner. At either end is a completed house, one of which is not fronted parallel with the frontage. The building line is taken as the line joining the frontage of the one house with the corner of the other farthest from the road, so that actually the remainder of this completed house projects in front of the building line. It so happens that it is greatly to our advantage to bring our new building out to a revised line joining the nearer corner of the end house. Is there any likelihood of pressure being brought to bear to allow this? The roads are not yet taken over by the local authority and are being administered by the estate management.

ARCHITECT.

Nuisance Caused by Spring: Question of Responsibility.

SIR,—In a London suburb there has been for the last five or six weeks a flow of water from a garden across the public footway (an admitted nuisance). It was at first thought to be caused by a burst water pipe, for which the tenant would be responsible, but it was ascertained that there was no water pipe near that part and that it arose from a spring which (owing to the exceptional rain recently) had broken out on the surface. Who is responsible to remedy the nuisance, and what is the simplest and most effective way?

G.

Elm Boarding.

SIR,—I have recently seen some floors laid with elm boards in very wide widths. They looked exceedingly handsome, but had opened considerably. Is this inevitable with this material, or is it possible to obtain sufficiently seasoned stocks to avoid the trouble?

LONGING.

LEGAL SECTION

NOTES ON CURRENT CASES

Liability of Landlords under the Housing Act.

In our issue for December 31 last we briefly noted the case of Morgan *v.* Liverpool Corporation under the above heading, but explained that the case could not be fully considered until a fuller report appeared in the Law Reports. The case has only recently been reported in August (1927, 2 K.B. 131), and we have on former occasions ventured to comment on the delay in reporting cases of such importance. The facts of the case are simple, but they raised some issues upon which agreement could not be arrived at in the Court of Appeal.

The plaintiff was tenant of a house within the Housing Act owned by the defendant Corporation, the standard rent of which was 6s. 6d. a week, but the rent had been increased to 8s. 1d. The plaintiff, when opening the upper portion of a window, had sustained injuries by the breaking of a sash-cord which had caused the window-frame to slip down and it had caught and injured his hand and he had suffered some injury to his eye from the glass which had broken in the fall. He claimed damages and based his claim mainly upon a breach of the covenants implied by Section 1 of the Housing Act, 1925, which now represents Sections 14 and 15 of the Housing Act, 1909. That section provides: "In any contract for letting for habitation a dwelling-house at a rent not exceeding: (*a*) in the case of a house situate in the administrative county of London £40; in the case of a house situate elsewhere £26; there shall, notwithstanding any stipulation to the contrary, be implied a condition that the house is at the commencement of the tenancy, and an undertaking that the house will be kept by the landlord during the tenancy, in all respects reasonably fit for human habitation. . . ."

It was alleged that there had been a breach of a covenant for quiet enjoyment and of the covenants implied by this section. The defendants contended that there had been no breach of the implied covenants, and secondly that notice by the tenant to the landlord of the defect was a condition precedent to the liability of the landlord. We will deal with this last point first, as on that point the Court of Appeal was unanimous and it really disposed of the action.

Two doubtful points have arisen in connection with this question of notice. In the first place, it has been said it has no application under the Housing Act, because by section 1, subsection (2), the landlord has power, on giving 24 hours' notice in writing to the tenant or occupier, to enter the premises and view their state and condition; and secondly, it has been questioned whether notice must be given where the defect is latent. In Fisher *v.* Walters (1926, 2 K.B. 315; *The Builder*, September 24, 1926), a Divisional Court recently held, under the Housing Act, that where the defect was latent notice need not be given. The majority of the Court of Appeal have now decided that notice of the defect to the landlord is necessary, whether the defect is latent or patent, despite the right of entry to view the premises conferred by the Act; thus the case of Fisher *v.* Walters must be taken to have been overruled.

The Master of the Rolls expressed some doubt upon the point whether the fact that the defect was latent would afford an excuse for not giving notice, but considered that this question did not arise in this case, as he doubted whether the defect was latent; but he referred to the decision of the House of Lords in Murphy *v.* Hurley (1922, 1 A.C. 369), where it was pointed out that the repairs of dwelling houses, however frequently required, are still casual and occasional, and that in the case of casual repairs it would throw an unreasonable burden on the landlord if he had to discover them. There is now a definite finding of the Court of Appeal on the two points which have caused doubts in the past, and therefore this is a very important decision to be noted by landlords and tenants.

This decision as to the necessity of notice really concluded the case, but the Court also considered the other points raised in it, although, as Lord Justice Atkin observed, the opinions expressed on those points and upon which the Court as a whole were not agreed, would be little more than *obiter dicta*, and not authoritative. It was argued that this defect did not render the house not reasonably fit for human habitation within section 1 of the Housing Act, 1925.

The Master of the Rolls held that the words "in all respects" contained in the section must be read with the qualification "reasonably fit," and the breaking of a window cord, an incident which must occur in every kind of house, by whatever class it is inhabited, afforded no test or proof by which the house could be held unfit for human habitation.

Lord Justice Atkin held that it was a question of fact, to be determined in each case, but the class of house and the people inhabiting it must be regarded. The test he suggested was that if the state of repair of a house is such that by ordinary user damage may naturally be caused to the occupier, either in respect of personal injury to life or limb or injury to health, then the house is not in all respects fit for human habitation, and, applying this test, he thought the present case fell within it. He also drew attention to the fact that in this case the tenant was prohibited from doing slight repairs himself because of regulations prescribing that nails must not be driven into woodwork.

Lord Justice Lawrence emphatically expressed the opinion that the defective window-cord did not render the house unfit for human habitation under the Housing Act. On this point we therefore find that the majority in the Court of Appeal were of opinion that this defect was not such as not to leave the house in all respects reasonably fit for human habitation within the section.

A further point raised in the case was that as the rent had been increased under the Rent Restriction Acts, section 2, subsection (5), of the Rent Act, 1920, imposed a statutory obligation on the landlord to keep the premises in "good and tenantable repair," which is a higher and more onerous obligation than merely to keep a house fit for human habitation. On this point the Master of the Rolls and Lord Justice Atkin were of opinion that section 2, subsection (5), imposed no such statutory liability as was contended for in this case, whilst Lord Justice Lawrence expressed the contrary opinion but intimated that if the fate of the appeal had depended upon this point he would have desired further time to consider it.

Section 2, subsection (1) (*d*), of the Rent Act, 1920, allows a further addition to be made to rent (1) where the landlord is responsible for the whole of the repairs; or (2) where he is responsible for part only; but in the latter case the amount must be agreed, or be determined by the County Court to be "fair and reasonable," and subsection (5), as the Master of the Rolls pointed out, interprets this subsection by showing what repairs the landlord is "responsible for" and what is intended by reasonable repairs. Subsection (5) is as follows: "For the purposes of this section the expression 'repairs' means any repairs required for the purpose of keeping premises in good and tenantable repair, and any premises in such a state shall be deemed to be in a reasonable state of repair, and the landlord shall be deemed to be responsible for any repairs for which the tenant is under no express liability." By section 5 of the Rent Act, 1923, where a certificate has been obtained from the sanitary authority that the house "is not in a reasonable state of repair," that affords a defence to any claim for increased rent.

The converse, so to speak, of this problem was considered by a Divisional Court in the case Jones *v.* Geen (1925, 1 K.B. 659; *The Builder*, February 27, 1925). There, in the case of a house within the Housing Acts, the landlord had increased the rent by the whole 25 per cent., on the basis that the landlord was responsible for the whole of the repairs, and the tenant was claiming back rent paid on this basis. There was an agreement in that case under which the premises were let for the term of one year, the tenant undertaking "to keep and leave the said premises in good and tenantable repair, fair wear and tear excepted," and the Court had to consider the operation of the Housing Acts in connection with this agreement. The Court considered whether the words in the then Housing Acts, "any agreement to the contrary notwithstanding," meant that the agreement should be entirely ignored and only the obligation implied by the statutes be applied, or whether any effect should still be given to the words contained in the agreement, and came to the conclusion that there was a marked difference between the statutory obligation to keep the house "in all respects fit for human habitation" and the contractual obligation to keep it in "good and tenantable repair, fair wear and tear excepted," and thus there were repairs which would fall upon the tenant, and the rent could not be increased on the basis that the landlord was responsible for the whole of the repairs.

The Court, however, in that case recognised that the Housing Acts and the Rent Acts were legislation of very different character aimed at very different evils and applying to houses of very different standards. The majority in the Court of Appeal took the same view, as they held that the Rent Acts were passed *alio intuito*, and did not, as do the Housing Acts, imply terms altering the relation between landlord and tenant.

Wall Paintings in Eton College Chapel.

During the holidays Professor E. W. Tristram, of the Royal College of Arts, Kensington, has carried out a restoration of the obliterated portion of the famous wall paintings in Eton College Chapel. The obliteration was due to the erection of an organ loft in the year 1700, when a section of the walls was covered with oil paint. This paint, says *The Times*, was removed three or four years ago, and the old designs were revealed, but in a very damaged condition. Professor Tristram's work has been extraordinarily successful, and there has been no interference with the remains of the original painting.

The fourth and last of the tapestries illustrating the story of St. George has been hung in the Lower Chapel, and the series is now complete. The tapestry, designed by Lady Chilston and executed at the Merton Abbey Works, is part of the Eton War Memorial. The first of the series illustrates the education of St. George; the second, his fight with the dragon; the third, his martyrdom and entry into Paradise; and the fourth shows him as Patron of England.

"Atlas White" stucco gave the ten houses shown above an attractive external appearance. A true white Portland cement stucco is not only a distinct asset from the standpoint of colour content and general aspect. A proper rendering of real concrete is a valuable protection to buildings of all sorts. The ten homes illustrated on this page are in Ballinlough Road, Cork. They were erected by the Irish Sailors' and Soldiers' Land Trust. The architect for these dwellings and a number of similar houses was W. J. Brown, Esq., F.R.I.B.A., of Dublin. The contractors were John Sisk & Sons, of Cork. Architects and surveyors who plan groups of homes nowadays take advantage of the possibilities of "Atlas White" stucco. An architect told me recently that he specified a coarse white silica sand as aggregate for the "Atlas White" stucco on four houses in a row of a dozen, a coarse ivory silica sand for five of the others, and a coarse reddish-yellow silica sand for the remaining three. As the colour of an orthodox stucco rendering is the colour of the exposed sand aggregate, the colour variation in the group of twelve—at no additional cost for labour or material—gives them an additional attractiveness and value. Write to me for my "Stucco Specifications."

Regent House,
Regent Street,
London, W.1.

Frederic Toleman

THE TRUSCON FLOOR

Reinforced Concrete

THE EXTENSIONS TO THE GENERAL HOSPITAL, LEWISHAM.

One of the new wards. The window space is generous, and the Truscon floors constructed throughout the building permit of very wide ceilings without depending beams. The electric light wiring is concealed in them.

Architects: J. DOUGLASS MATTHEWS, SON & RIDLEY, F.R.I.B.A., AA.R.I.B.A.
Contractor: ALBERT MONK.
Reinforced Concrete Engineers: THE TRUSSED CONCRETE STEEL CO., LTD.

The chief requirements for hospital floors are that they shall be soundproof and fireproof. It is also desirable to avoid the use of depending beams which form covers for the lodgment of dust.

The Truscon hollow floor, being constructed only of reinforced concrete with a suspended ceiling, is particularly soundproof and fireproof. These floors are constructed up to 28 ft. span without intermediate supports.

THE TRUSSED CONCRETE STEEL CO., LTD.

REINFORCED CONCRETE ENGINEERS

22, Cranley Gardens, South Kensington, S.W.7.

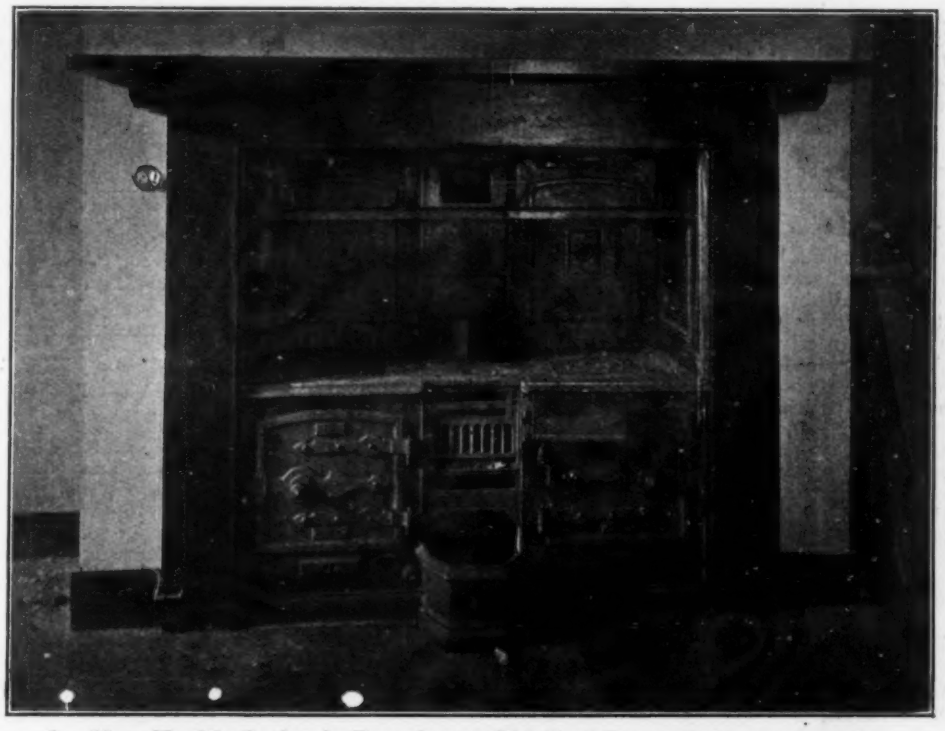
HEATING AND VENTILATION

THE PROGRESS OF GAS HEATING

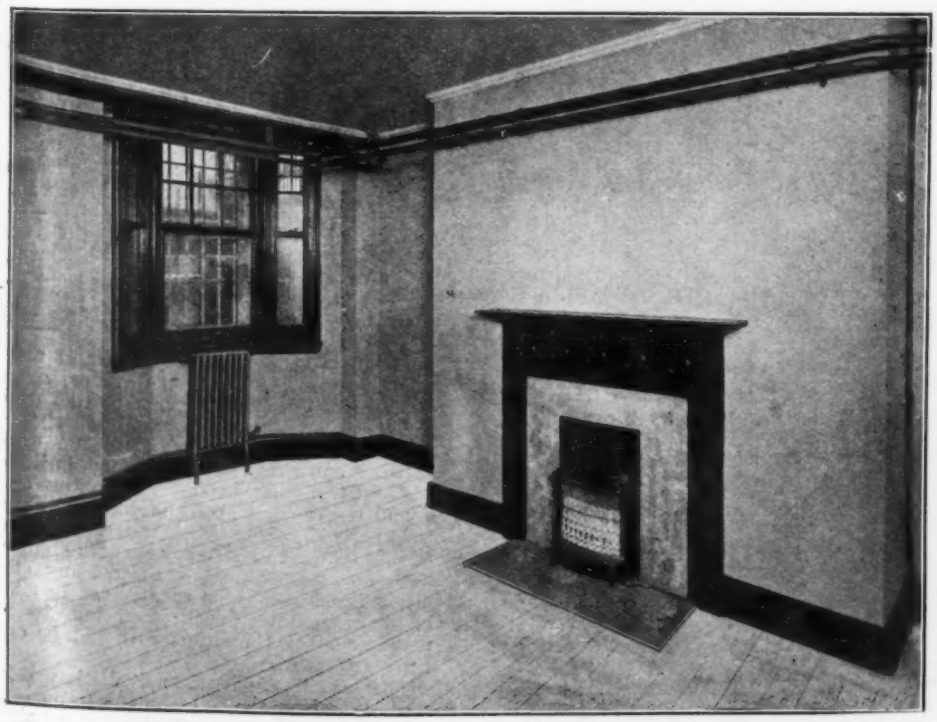
The issue of *The Builder* dated September 24th, 1926, contained an article, entitled "Gas Heating and Smoke Abatement," which set out some details regarding the gas industry's contribution towards the solution of the smoke problem—the curse of our cities and towns. It is pertinent at this time of the year, when we are on the verge of the autumn and winter months, to consider the further progress which has been —or is being—made in the campaign for the abatement of smoke and by gas heating, the latter viewed not only in the light of its value towards attaining a more healthful, cleaner and brighter atmosphere, but also regarded as a modern method of warming our homes without drudgery, a function which is of no less importance than its smokelessness, and which it is performing to an ever-increasing degree.

The smoke abatement cause, which has been strongly advocated by medical men and other scientists for a number of years, has made notable progress during the past twelve months, as it has now attained the dignity of being the subject of an Act of Parliament. Mr. Neville Chamberlain, Minister of Health, on July 1st this year broadcast from the Birmingham Studio of the B.B.C. an address on "Cleaner Cities." He then announced that on that day there came into operation a new Act, entitled "The Public Health (Smoke Abatement) Act," which was intended to help to reduce the terrible waste of fuel, the destruction of plant life and the soiling of materials, which have constantly to be washed. He pointed out that the law had been strengthened in several respects regarding factory premises, but put great stress upon the fact that the Act does not make any provision for prohibiting the emission of smoke from the domestic chimney, although, according to a Committee which investigated the subject, household fires are responsible for five times as much smoke as factories. He further mentioned, regarding new houses, that they are already largely being fitted with non-smoke-producing apparatus, and that 75 per cent. of those being built by local authorities are fitted with gas cookers.

In October or November next a Smoke Abatement Conference, which will be held in London under Mr. Neville Chamberlain's chairmanship, will be attended by representatives of Metropolitan local authorities and Government Departments. The Conference will be mainly devoted to a consideration of the above-mentioned Anti-Smoke Act, with a view to securing uniformity of administration by public authorities. The question of the prevention or reduction of domestic smoke, which is not yet the subject of legislation, will, however, probably be raised, having regard to the well-known desire of the Ministry of Health that local councils and housing authorities should do all in their power to encourage the use of gas installations, and other forms of smokeless heating in new building schemes which are carried out either by municipal or private enterprise.



1.—New Health Society's Premises: Old Coal Range before conversion.



2.—New Health Society's Premises; Old Coal Range shown in Fig. 1 converted with modern Gas Fire and Manu-Marble backing.

Mr. L. W. Chubb, Secretary of the Coal Smoke Abatement Society—whose premises are heated by gas fires—at a recent interview with a Press representative on the subject of the Conference, stated that its chief purpose will be to settle the question of what is and what is not "avoidable smoke." He also said: "We must work within the four corners of the new Act first. Later on we shall resume our propaganda for the mitigation of the domestic smoke nuisance. To this end the society proposes to hold meetings and to issue appropriate literature to the public."

The Domestic Chimney.

The fact that the domestic chimney is the greatest culprit as regards the emission of smoke has been realised for some years by those who lead the gas industry. With a view to meeting satisfactorily and economically the modern demand for smokeless cooking, water heating and heating appliances, the leaders of the gas industry have, in conjunction with the gas-stove manufacturers, carried out a great deal of research work, as a result of which scientifically constructed and hygienic apparatus has been—and is now being—installed in hundreds of thousands of houses in all parts of the kingdom. Gas-fired apparatus is also being increasingly installed in factories, and a great number of old-fashioned appliances have been converted for use with gaseous fuel. The new Act will, of course, cause a rapid extension in the latter direction.

Builders and Gas Apparatus.

As some evidence of the movement towards smokeless, labour-saving domestic appliances, it may be pointed out that quite

contrary to the action usually taken in the past, builders are now arranging with local gas undertakings not only to instal a complete piping system throughout the premises which they are erecting, but are also purchasing and installing gas cooking stoves, gas coppers, gas water heaters and "built-in" gas fire mantel registers as integral parts of their houses or flats.

Before setting out some recent interesting installations, including several new features in connection with the use of gas for heating, it may be mentioned that *The Builder* was the first technical journal to draw attention to "built-in" gas fires, fitted to what—for the want of a better name—is known as the economy flue.

First specifically referred to in our issue for September 24th, 1915, and again on July 4th, 1919, the principle has spread by leaps and bounds. As at first applied, it took the form of a fire especially designed to fit against a tiled or other form of backing, with a prepared mantel on a wall which contained a flue 9 in. by 3 in. or 12 in. by 3 in., according to the size of the fire, but in later years it has been constructed in the mantel register form, finally combining gas fire, mantel, and hearth in one piece of apparatus, which may readily be fixed to the wall by two small lugs. Again, in its first form it was only made of small heating capacity, and in one simple plain design, suitable for the small parlours and bedrooms of houses such as those erected by municipalities. The system has been so extensively adopted that the gas-stove makers have now provided a very wide range of sizes and designs of gas-fire mantel registers, some of which are in imitation tiling and quite worthy of installation in good-class houses.

3.—Surgery in Wellington College, Berks, showing gas fire fitted to tiled backing, with pedestal burner for heating water.

The Importance of Properly Constructed Flues.

It cannot be too strongly emphasised, however, that care should be taken in constructing the flues for such fires, made either in concrete or brick, according to the wishes of the architect or builder. No apology is necessary, therefore, for setting out some recommendations and details regarding the best methods of constructing flues designed for the ventilation of gas fires. The flue areas quoted below are calculated on a liberal basis to allow not only for the removal of all the products of gas combustion, but also to provide an additional—and invaluable—ventilating effect on the room.

In the opinion of most medical men and other health authorities, no room is really hygienic without some natural form of ventilation, which function is satisfactorily carried out by a properly constructed gas-fire flue. "No room without a flue" should be the slogan of all those who value the future health of the community, and it would be worse than useless, and indeed ironical, to improve the outer atmosphere by instituting smokeless forms of heating and other domestic services, whilst ceasing to construct flues or ventilating shafts in the rooms of our houses. An air-brick (instead of a flue) in a bedroom wall practically always acts as an intake and rarely—if ever—as an extractor. It is a delusion and a snare; and as, moreover, it is usually the cause of a draught of cold air coming into the room, it is sooner or later likely to be stuffed up by the occupant, to the ultimate detriment of his health.

4.—St. Andrew Undershaft Church, heated by the latest pattern gas-heated radiators.

Some details and recommendations regarding the construction of gas-fire flues, including the minimum permissible flue areas for each size of gas fire, and the approximate floor areas of the apartments for which they are suitable, are given below:—

Number of Radiants.	Size of Gas Fire Front.	Minimum *permissible* Flue area.	Approximate floor area of rooms.
5 & 6	8 in.	20 sq. ins.	100 sq. ft.
7 & 8	10 in.	24 „	150 „
9	13 in.	30 „	200 „
10	14 in.	36 „	225 „

The cavity of a hollow wall must not be used as a flue for gas fires unless a suitable shaft is properly constructed therein. If smoothly finished, the size of the flue for the smallest gas fire need not exceed 20 sq. in. in area. All flues for "built-in" gas fires should discharge into the outer air above the ridge of the roof. Each gas fire must have its own independent flue, which throughout its entire length shall not be connected with, or run into, any other flue. The flue may be constructed in either brick or concrete block; parging is not necessary, but the interior should be carefully trowelled.

The gas fire should not discharge immediately into the flue shaft, but an opening rather greater than the full width of the fire outlet should be gradually (not abruptly) gathered over in the same man-

ner as is done in the case of a coal fire, providing a products-of-combustion chamber above the gas-fire outlet corresponding with the smoke chamber which is always constructed above a coal fire.

Some Examples of Comprehensive Gas Installations.

We give hereunder details of some comprehensive installations of gas-fired apparatus in various parts of the country. These are only examples of many similar installations which could be quoted. In no fewer than 9,219 out of 9,868 new houses already built in Glasgow under local authority or private housing schemes, gas cookers, gas wash coppers, and two gas fires have been installed in each house. The above figures relate to houses already built. A further 6,909 houses are, however, now in course of construction. Gas cookers and wash coppers will be used in 6,865 of these, and some gas fires will also be fixed in each, though at least one solid fuel grate will always be provided. It will thus be seen that of the 16,777 tenants in houses constructed or in course of construction in Glasgow, no fewer than 16,084 (or over 95 per cent.) will use gas for cooking, for heating water for washing purposes (and in many cases for baths), and also for heating rooms which are intermittently occupied.

In Liverpool, where about 9,000 new houses have already been built under housing schemes, and the construction of a further 4,000 is well in hand, gas is being used for cooking in 98 per cent. of the houses, and in over 90 per cent. gas-fired wash coppers are also being installed. Some 12,000 gas fires have already been fixed in the completed houses, and in each of those not yet completed there will be fixed either two or three gas fires, according to the "class" of the house. There will soon be at least 20,000 gas fires in use in houses built under the housing schemes in this city.

The Gorgie Housing Scheme, Edinburgh, when completed, will consist of 510 flats at rentals of from £24 to £28 per annum, excluding taxes. Each building has three floors and contains six or twelve flats. The flats have two or three bedrooms, a living room, a scullery, and a bathroom. Gas fires are being fixed in every bedroom and in each scullery a gas copper and a gas cooker are being fitted.

It is quite impossible to give comprehensive and detailed statistics relating to the many housing schemes which have been completed, or are in course of completion in London. In the area of the largest London gas undertaking, however, the London County Council has in hand schemes involving the construction of some 28,500 houses. About one-third of these houses are already completed and occupied. Gas is to be used for cooking in almost every one of the London County Council houses, and some thousands of gas water heaters and gas fires are being installed ready for the tenants' use.

A few instances of what is being done by private enterprise may also be given. The Foundation Co., Ltd., are erecting approximately 1,500 houses on various estates at Southall, Harrow, Acton and Ealing, and, in addition to having gas supplies run throughout, are installing a gas cooker and two combined gas fire mantel registers in each house ready for the tenant's use. Mr. George Willson, of Halifax, whose architect is Mr. W. A. Ross, A.R.I.B.A., is erecting over 200 houses at Egham, and is equipping each house with lighting fittings, a gas cooker, a gas copper and two gas fire mantel registers. Mr. C. B. Heygate is erecting about 200 houses at Edgware, and is actually installing five or six gas fires, a gas cooker and a coke boiler in every house. Messrs. R. Costain and Son are erecting over 1,200 houses on the Brentwater Estate, Willesden, and are installing a gas copper, water heater and two gas fire mantel registers in each house. Mr. Frank Perry, whose architect is Mr. H. H. R. Ward, is erecting over 250 houses at Kingsbury, and is installing a gas cooker, copper, geyser, and two gas fire mantel registers in each house.

Gas-fired Boilers for Central Heating.

From time to time reference has been made in *The Builder* to the use of gas boilers for central heating plants. A number of such installations continue to be carried out, amongst which may specially be mentioned those for the heating of small suites of offices and such premises as branch banks. The coke-fired boiler is generally found to be the most satisfactory and economical appliance for central heating work in large office premises—such as the head offices of banks, insurance companies, and so on. Wherever fuel storage space is not available, however, or if there is any difficulty in providing the necessary labour for stoking, it has been found that the gas-fired boiler is preferable, despite the fact that the fuel cost is higher for a given service. For heating plants of quite appreciable magnitude, powerful and highly efficient gas-fired boilers are now obtainable made in a number of sizes to meet varying demands. These boilers require little or no attention, as their gas supply is automatically regulated to maintain the temperature required, the consumption of gas being thus reduced as soon as the temperature rises above a pre-determined point.

For the heating of small suites of offices and branch banks gaseous fuel fired boilers are appropriate for the following reasons. The heating equipment required for a branch bank of average size consists of no more than four to six radiators (with a total heating surface of, say, about 80 to 120 square feet) in the public office, and one radiator in the manager's room, the latter being sometimes supplemented by a radiant gas fire. The installation is thus quite a small one. The basement is generally required for the strong room, and for providing lavatory accommodation for the bank staff, and it is difficult, therefore, to set aside sufficient space for the storage of solid fuel. In such establishments there may be no porter or resident caretaker on all-day duty to attend to the firing of the boiler, and the clerical staff cannot be expected to do this work. The small space occupied by gas boilers is also another consideration, and as in business thoroughfares the annual values of the premises are high, all space must be utilised to the best advantage.

One example of gas-fired boiler installations in London may be mentioned. At a branch of Messrs. Lloyd's Bank, Ltd., at Gray's Inn Road, the manager's room and general offices are warmed by a total of five hot water radiators heated by two gas-fired boilers fitted in a corner of the basement. Other similar installations are in use at several of the branches of Barclays Bank, Ltd., and the Westminster Bank, Ltd.

In Birmingham quite a number of small banks have been thus equipped, and a novel feature has been introduced which has proved a valuable addition to the installations. The Birmingham Municipal Banks consist mainly of lock-up premises, the hours of business varying considerably in order to meet the requirements of the depositors. It is considered necessary that each of these banks should be suitably warmed before it is opened to the public, and in the absence of a resident caretaker to light the gas boilers, this necessary action is carried out automatically by what is known as a "Rota" clock, which is fitted to the supply, and allows gas to pass to the boiler or boilers (at each of which a pilot light is always burning) at a pre-arranged time. In this manner one boiler—or a complete battery—may automatically be put into operation in the early morning, thus ensuring that the building is warmed by the time the staff arrives. The boilers are also fitted with an ordinary ½-in. byepass cock, which may be manipulated by hand and can either be turned fully on or only partly on, in accordance with prevailing climatic conditions. In some cases the manager also has a gas fire installed in his room. This is an inexpensive addition, as it is only used when the room is occupied, and then only when the additional heat or added cheerfulness of a gas fire is required.

The staff rooms of these banks are heated by a gas fire which has above its radiant fire-front a grilling oven with a special burner which can be used either to heat the oven or to boil a kettle or other cooking utensil placed on top. With this appliance any member of the staff can, if desired, prepare or warm up a mid-day meal; and water can be boiled and toast made for teas. Incidentally, hot water for washing and cleansing purposes is obtained from a gas-fired water heater.

5.—Vestibule of the Capitol Cinema, Haymarket, showing the "St. Martin" gas-heated radiators.

Fitting Gas Fires to Coal Grates.

The conversion of coal grates by the installation of gas fires against them, may now be regarded as almost a fine art. There are many modern ways of turning the old ugly combination of a coal grate with a gas fire placed in front of it into a thing of

beauty. Adjustable metal back plates or surrounds are now obtainable, finished in either plain or beaten antique copper, pewter or brass, and can be so fitted as completely to cover up existing coal grates; hearth plates to match can also be obtained if required. Other materials are also becoming popular for backings or surrounds. For instance, real marble panels, Urastone, Manu-marble, slabbed tile or built-up tile backings and the composition known as "Stuc." Any one of these may be so selected and installed as completely to harmonise with the scheme of decoration and with the gas fire which is to be fitted.

Perhaps one of the best indications of what may be done in the way of conversions is shown in Figs. 1 and 2, which are photographs of a room in the New Health Society's premises, Mr. Claude W. Ferrier, F.R.I.B.A., architect. Fig. 1 shows an old coal range as it was originally fitted in the kitchen of a large Bloomsbury mansion. Fig. 2, as it now looks, after being converted to gas heating for office purposes. The gas fire is one of a modern type fitted to a Manu-marble backing.

Another more ordinary type of conversion is shown in Fig. 3, which is a photograph of the surgery of the Sanatorium at Wellington College, Berks. In this case the gas fire has been fitted to a tiled backing, entirely masking the opening of the old coal grate. The pedestal boiling burner fitted on the hearth is a most valuable adjunct to such a room.

Flueless Heaters.

As a result of extensive research work, which has been carried out in the laboratories of the principal gas undertakings and gas stove manufacturers, a great improvement has been made in recent years in the construction of flueless gas heaters of the radiator pattern. The most modern type of these stoves has luminous flames, one of which burns separately in each tube or loop of the radiator. In one pattern the bottom is closed and the flames entirely masked; in another, the bottom is open, disclosing a bright metal surface from which the heat is reflected, thus providing a cheery glow. Each of them is fitted with a burner controlled by a Regulo Thermostat. This device automatically (and economically) regulates the gas consumption to a degree which will maintain the radiator at a predetermined temperature. These radiators have a considerable heating capacity; they are of attractive appearance, and are obtainable in various sizes from 4 to 10 loops.

An example which may well be referred to as ancient and modern is Fig. 4, a photograph of St. Andrew Undershaft, St. Mary Axe, London, a beautiful old City church, the Rector of which is the Right Reverend William Willcox Perrin, D.D., D.C.L., Suffragan Bishop of Willesden. This church was built in 1320, rebuilt in 1582, and is one of the seven City churches that escaped the Great Fire. This church is now heated in the modern fashion by the above-mentioned new type of gas radiator, one of which may be seen on each side of the picture.

An Important Advance in Cinema Heating.

We have previously referred to the Plenum heating and ventilating system at the Capitol Cinema, Haymarket, London (Mr. Andrew Mather, L.R.I.B.A., architect), which is operated by gas boilers as the heating agent, with an hourly output of 1½ million B.Th.U.s. The boilers are installed on the roof, thus saving valuable space in the building for other purposes. When the building was erected the Plenum system was designed primarily to heat and ventilate the auditorium, and a number of electric radiators were installed to warm the vestibule, corridors, etc. Early last winter it was decided to experiment with a modified form of the new gas-heated radiator, to meet the requirements of the London County Council authorities, regarding such buildings as cinemas, dance halls and similar places of entertainment, in respect of which they are guardians of the safety and health of the public. The experiment met with complete success, as a result of which a new flueless radiator known as the "St. Martin" has been constructed. It has a special arrangement at the base to ensure that the burner is entirely enclosed, and can only be lit through a special opening provided for the purpose, after which the aperture is automatically sealed by the closing of a covering plate, small coloured glasses in the base of the radiator indicating when the burner is alight. Fig. 5 is a photograph of the vestibule of the Capitol taken by permission of Sir Walter Gibbons. It shows several of the new gas radiators, no less than 65 of which are now installed in the vestibules, tea rooms and corridors of this well-known cinema. The radiators have met with the approval of the London County Council and have given complete satisfaction to the proprietors.

WARMING OF CHURCHES, PUBLIC BUILDINGS, AND PLACES OF ASSEMBLY

BY A HEATING ENGINEER.

WHATEVER advantages may be claimed for hot water in connection with the central heating of dwellings such as villas and the smaller types of buildings generally, it is certain that so far as large places of assembly are concerned, it does not possess any of the outstanding advantages that may be claimed for steam. Whenever the warming of churches, lecture halls, theatres and buildings used for public meetings, concerts and dances, is under consideration, the advantages associated with the use of steam should not be lost sight of.

In England there are a great number of churches and other places of worship that are by no means satisfactorily warmed, in spite of the fact that, in most cases, a low-pressure hot-water heating apparatus has been installed; in many instances an error is made by choosing the wrong type of radiating or heat-losing surface, this often consisting of 3 in. or 4 in. cast-iron pipes run in trenches below the level of the floor, the trenches being covered with cast-iron gratings. It is strange that an apparatus of a type particularly suited for warming a greenhouse should also be thought suitable for the warming of churches and other public buildings, where such vastly different conditions have to be dealt with.

For horticultural work of the ordinary kind, where the heating apparatus is in the care of one of the ordinary workmen—no one being specially employed as a mechanic or stoker—a hot-water apparatus consisting of large pipes has its advantages; the large volume of water contained within the pipes being comparatively slow in heating up, and about equally slow in cooling; consequently, should the fire be either forced or neglected as the result of unskilful stoking, there would be less likelihood of injury to the plants, owing to there being no possibility of a sudden and extensive rise or fall in the temperature.

But for warming churches and large public buildings, large pipes containing a considerable volume of water form one of the most unsatisfactory methods that are available for the purpose; the disadvantages may be stated in the following order:—

1. Churches being occupied, as a rule, on one day only in each week, it is a distinct advantage to be able to warm them quickly. This is a matter of some difficulty when a large quantity of water has to be heated, as the greater part of the heat generated in the firebox of the boiler is almost wholly taken up, for perhaps quite a considerable time, in raising the water to a serviceable temperature. There are numerous installations, the pipes and radiators of which hold many hundreds of gallons of water; the capacity of the boiler being considerable also.

2. Large circulating pipes take up considerable room, and, such being the case, it is generally necessary to run them in trenches in the floor, the trenches being covered by a cast-iron grating. The construction of trenches is a costly business, involving as it does work for the excavator, the bricklayer, and also for the mason, in those buildings where the floors are of stone. Although pipes in trenches are out of the way, they are not in a position favourable to the warming of the building, as much of the heat given off is absorbed by the surrounding masonry and the floor; and, whilst it may be true that this in turn gives heat to the air in the building, yet it is beyond question that to warm a place of assembly by first warming the brickwork and masonry at floor level is an exceptionally slow, indirect, and somewhat expensive method.

In the case of churches, and of large buildings, the floor concrete of the main building is, in the majority of cases, placed directly upon the earth, and, under such conditions, pipes run in trenches are in one of the most favourable positions for dissipating enormous quantities of heat; this, of course, means that, in order that the building may be properly warmed, considerably more radiating or heat-losing surface must be provided when it is placed in trenches than would be necessary if the pipes which provide such surface were run along the floor, and in positions more favourable for raising the temperature of the air within the building. Moreover, pipes in trenches are not in a position where the air has easy access to them; an even more serious drawback is that they are so placed as to render it almost imposeible to keep them clean. Attention may be directed to the fact that the amount of heat given off by radiation is relatively small in comparison with the amount absorbed by the air coming into contact with the heated surfaces, consequently it is a distinct advantage if the air inside a building may easily make contact with the heat-losing surfaces of the heating apparatus.

3. Pipes in trenches are quickly covered with a layer of dirt and dust, which is a fairly good insulator, and this considerably hinders the giving off of heat; these dirt-covered pipes are far from being hygienic—much of the dirt having fallen from the soles of boots—and the unpleasant result is that when the apparatus is brought into full service, the peculiar smell due to heated dirt and dust is always noticeable. It would be very unreasonable to suggest that the caretaker should take up and replace the heavy gratings in an endeavour to clean the pipes occasionally; nor is it likely that this would be satisfactorily done if outside workmen were called in for the task; the dirt would probably be swept from the top of the pipes, and would find a permanent resting-place on the floor of the trench beneath them.

4. So slowly is the heating of churches of quite moderate size, accomplished by hot water installations having pipes of 3 in. or 4 in. diameter, that in a number of cases that have come to the writer's notice, it is necessary to light the boiler fire on the Friday morning if the building is to be satisfactorily warmed for the service on the following Sunday morning. Considerably

more radiation is required with hot water than is required with steam to obtain a similar result; this, of course means that more space is taken up by the pipes and radiators when hot water is the circulating medium.

The advantages connected with the use of steam for warming buildings of the type under consideration may be enumerated as follows:—

1. It is now possible to erect low-pressure steam, vapour, or vacuum heating installations, and to guarantee completely successful results with an entire freedom from noise; this is a matter of the very first importance in a church, or any building that is used for public speaking.

2. According to one authority, steam at atmospheric pressure has the enormous heat capacity (calculating from 32 deg. Fahr.) of 1,151.7, B.T.U.s, for every pound of water evaporated. It is possible to raise steam very quickly, and it then speedily finds its way to the more distant parts of quite extensive installations. In the case of the very largest installations having long horizontal runs of steam and return mains, a vacuum pump may be installed, thereby ensuring that the steam will reach the most outlying radiators almost immediately.

3. The fact that when the boiler fire falls low the temperature in a steam-heated building may also fall rapidly is no disadvantage whatever when the building is empty after being used, as is the case with places of assembly.

4. Less radiating or heat-losing surface is required with steam, consequently less room is taken up by pipes and radiators; this is a great advantage, as it will, in most cases, permit of radiators being placed under the windows along the outside walls, the pipes being run above the floor, and thereby obviating the making of expensive trenches. It may be pointed out that 6½ sq. ft. of heat-losing surface that derives its heat from low-pressure steam, will give out as much heat as will 10 ft. of similar surface that derives its heat from hot water.

5. Churches being rather lofty buildings the members of the congregation often experience down draughts of cold air during the winter. Radiators placed at floor level will be found to have little warming effect upon the air at a greater height than 15 ft., and to remedy this unsatisfactory state of affairs, the method adopted is to run one or more pipes along the walls at a height as near as possible to that mentioned; it is often possible to run these high-level pipes so that some feature of the building will either wholly or partly hide them; here, again, the smaller pipe that may be used with steam is a decided advantage.

With installations that have a vacuum pump forming part of the system, it is possible to heat a building several stories high, with steam or vapour generated at a pressure below that of the atmosphere; contrast this with the pressure to which the lower parts of an apparatus in a building of similar height would be subjected, supposing that hot water was the heating medium.

It would be of considerable assistance in connection with the heating of churches if, when the architect prepared the plans, he would allow the consulting heating engineer to work with him. If this were done, it might be possible to arrange the seating accommodation so that some of the radiating or heat-losing surface could be placed in the central part of the church.

In conclusion, attention may be directed to the fact that modern steam heating installations, having the hot water type of radiator with the steam inlet at the top, and the outlet for condensation (controlled by a thermostatic steam trap) at the bottom, and preferably at the opposite end, offer a more extensive range of temperature control than is possible with hot water installations; this not only eliminates one of the former objections to heating buildings by steam, but it also confers very decided advantages.

EXHAUST STEAM AS A HEATING AGENT

By A. W. B.

THE successful warming of buildings is not only a progressive industry, it is also a progressive science. A highly qualified heating engineer may be asked to design a heating apparatus, and to guarantee that it will give the temperature necessary for special, and sometimes varying, conditions, with a complete absence of draughts. Nor must he overlook such important matters as smoke abatement and the conservation of fuel. There is one branch of steam heating which has not yet received anything approaching the amount of attention it deserves, and that is the heating of buildings by exhaust steam. As a means of distributing heat, steam is deservedly in high favour, but one of the most economical methods of steam heating—that in which exhaust steam is made use of—has, to a large extent, been overlooked.

Throughout Great Britain there are a very large number of factories, workshops, and other buildings, in which, during the winter months, the workers labour under rather unsatisfactory conditions, in that they are not sufficiently warm, and are consequently, to some extent, discontented and unable to give the highest output of which they would otherwise be capable. In many of these same factories, etc., there is sufficient exhaust steam from the engines to furnish the necessary heat for the warming of the buildings, if this escaping steam were properly controlled and used, instead of being discharged into the atmosphere.

The use of exhaust steam as a heating medium may prove to be economical and profitable in quite a number of ways, to a few of which attention may be directed.

In the first place there is the higher labour output brought about because the operatives work under more agreeable conditions. Next, the exhaust steam, which would otherwise be wasted in the atmosphere, is utilised for warming the buildings, and the condensate is not wasted, but is collected and returned to the boiler at a temperature ranging from 150 deg. to 160 deg. F. Three distinct advantages are thus brought about, these being due to a direct gain in the labour output, and to a considerable saving of water, and consequently of heat units and of fuel.

Thirdly, by the installation of a vacuum pump, it is possible to avoid any back-pressure upon the pistons in the engine cylinders.

Lastly, the increased labour output, and the continuous saving of water and of fuel, will in a short time more than counterbalance the expense incurred in installing the exhaust steam heating installation; indeed, one of the most profitable investments that an employer of labour can make is that of installing an exhaust steam heating apparatus, provided that suitable conditions avail. The cost of installing the apparatus has to be made once only, but the higher labour output, the increased profits, and the saving of fuel, result in financial gains that continue year after year.

Connections and Special Fittings.

Heating by exhaust steam calls for the use of the following special fittings and the necessary connections:—(1) A back-pressure valve; this must be connected to the steam exhaust pipe in such a position that the end of the piping which extends from the outlet side of the valve, has free access to the atmosphere. In most cases where buildings are heated by exhaust steam a vacuum pump is employed, and back-pressure upon the engine pistons is prevented entirely; but even without such a pump, a very light weight upon the back-pressure valve is all that is necessary to ensure perfectly satisfactory heating service, consequently only an exceptionally small amount of extra work is thrown upon the engines. A steam operated vacuum pump may be employed; the supply of steam being obtained from the high pressure main, and the exhaust being discharged into the exhaust steam heating main so that it may assist in the warming of the buildings.

(2) An oil separator; this fitting is necessary because of the oil that is carried by the exhaust steam. On no account must oil be allowed to enter the heating system; if the interior surfaces of the radiators are coated with even a very thin film of oil, their efficiency will be greatly reduced. The oil separator must be connected to the steam exhaust pipe, before the said pipe is joined to the heating main; a *gate* valve should be fixed as near as possible to the *inlet* side of the separator, both of these fittings being so placed that when the gate valve is shut for the purpose of cleaning or repairing the separator, the exhaust steam may pass freely through the back-pressure valve and escape into the atmosphere; Fig. 1 will make this clear. The makers of oil separators will furnish the necessary instructions for fixing; Fig. 2 shows one of these fittings connected to an exhaust steam heating main.

(3) A pressure reducing valve; this must be connected directly between the live steam main and the exhaust steam heating main. A by-pass, with stop valve, must also be connected as shown by Fig. 3. A globe pattern stop valve must be inserted in the live steam main as near as possible to the inlet side of the pressure reducing valve, and a gate pattern stop valve must be connected as near as possible to the opposite (outlet) side. When conditions render it necessary, steam, reduced in pressure, will pass from the pressure reducing valve, through the gate valve, and into the exhaust steam heating system, where it will supply heat to the

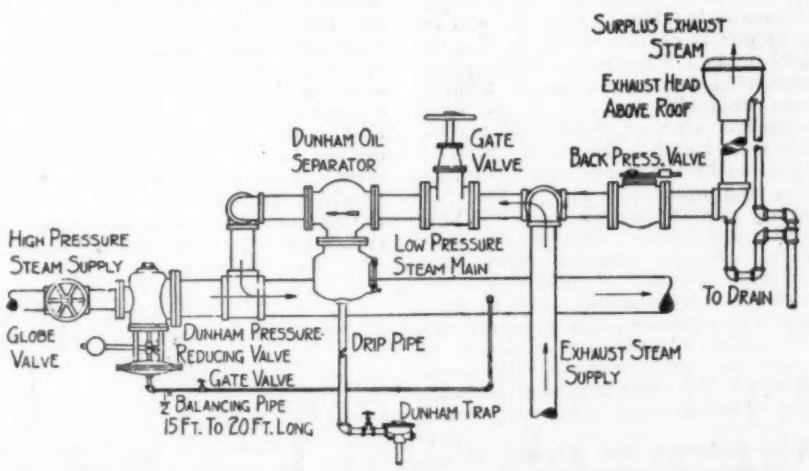


Fig. 1.—Pressure Reducing Valve: Oil separator and back pressure valve connected to exhaust steam heating main.

pipes and radiators. It should be carefully noted that the globe valve and the gate valve are within the by-pass connections: this arrangement makes it possible for live steam to be passed through the by-pass and discharged into the exhaust steam heating main, should it be necessary at any time to close both the large (main) valves in order that the pressure reducing valve may be removed for repairs. When the steam is supplied by a high pressure boiler, a 2-in by-pass will be found sufficient to supply an 8-in. low pressure heating main; a 3-in. by-pass being sufficient in the case of a 10-in. or a 12-in. low pressure main. The size of the by-pass is governed by the pressure carried in the high pressure main, and by the size of the heating main it has to supply.

A safety valve of reliable make should always be connected to the exhaust steam heating main as a safeguard against an excess of pressure accumulating in the heating system should a piece of scale or other foreign matter find a lodgment upon the seating of the pressure reducing valve, and so prevent its closing completely. The safety valve would also afford the necessary relief should too much steam be inadvertently allowed to pass around the by-pass and into the heating system. Attention may be directed to the important fact that the safety valve must be fixed in a position which is clear of all stop valves as indicated by Fig. 3.

The purpose of the pressure reducing valve is to supply steam *automatically* from the high pressure main to the exhaust steam heating main, if at any time the supply of exhaust steam should be wholly or partially cut off or, from any reason, become insufficient to meet the demands of the heating installation.

It would be a mistake to assume that, because a by-pass is advocated, a pressure reducing valve is an appliance that is likely to give frequent trouble, as this will not be the case if one is chosen which is of good design and make. Sometimes steam mains are disconnected for the purpose of making alterations or additions, and if at such times a piece of scale or other solid matter becomes detached and is left in the pipe, it may be carried by the steam into the reducing valve, and eventually find a place of lodgment on one of the seatings. Whenever any foreign matter lodges on the seatings of a pressure reducing valve, that appliance must be taken to pieces before the obstruction can be removed, and at such times the low pressure main may be supplied with steam, if necessary, by means of the by-pass, the safety valve giving warning and relief if at any time the pressure should exceed the normal.

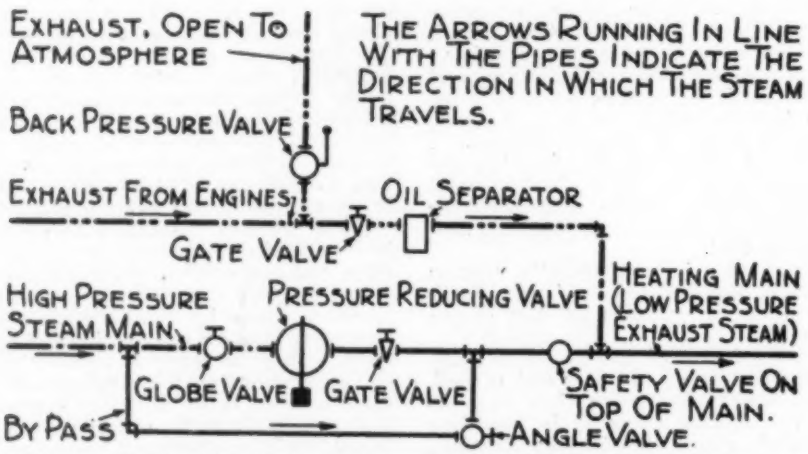

EXHAUST, OPEN TO ATMOSPHERE
THE ARROWS RUNNING IN LINE WITH THE PIPES INDICATE THE DIRECTION IN WHICH THE STEAM TRAVELS.
BACK PRESSURE VALVE
EXHAUST FROM ENGINES
OIL SEPARATOR
GATE VALVE
HEATING MAIN (LOW PRESSURE EXHAUST STEAM)
HIGH PRESSURE STEAM MAIN
PRESSURE REDUCING VALVE
GLOBE VALVE
GATE VALVE
SAFETY VALVE ON TOP OF MAIN.
BY PASS
ANGLE VALVE.

Fig. 3—Heating by Exhaust Steam: Plan showing connection of various fittings, etc.

Principles Governing the Working of a Pressure Reducing Valve.

A pressure reducing valve is a mechanical appliance concerning which there is considerable misconception. Many mechanics who are connected with the heating industry hold the mistaken idea that a pressure reducing valve merely reduces the area of the orifice through which the steam is allowed to pass; if such were the case these special appliances would be quite unnecessary, as the same result could be obtained by inserting in the steam supply main an ordinary stop valve, which could be closed to whatever extent should be considered necessary to achieve a desired result. Another method would be that of reducing the internal diameter of the main to the necessary extent and at the proper point. If either of the foregoing methods were adopted, the reduced area would bring about a great reduction in the quantity of steam that could pass through in a given time, and so long as the end of the piping remained open, and a free outlet was thereby provided, all might be well. But, supposing the piping had a stop valve on the outlet end, what would happen in the course of a few moments, so far as pressure is concerned, if the valve were closed completely?

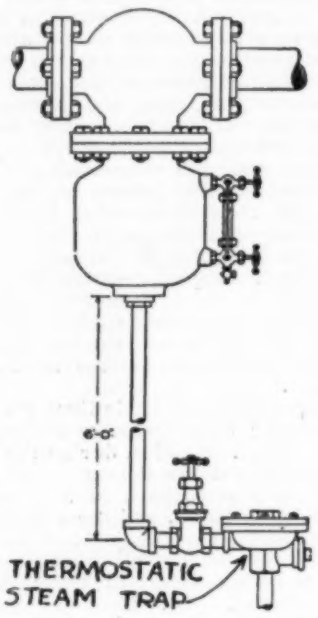


Fig. 2—Oil Separator connected to an exhaust steam heating main.

The sketch Fig. 4 will help to make clear the difference between a reduction in the pressure of steam and a reduction in the quantity passed through an orifice. In the sketch, A represents a 4-in. steam main, which is connected directly to the boiler, the pressure in which is 100 lb. per square inch, this being indicated by the gauge E. The main A is connected by a ¾-in. pipe with another 4-in. main C. On the end of C is a 1½-in. stop valve H, which, when open to the full extent, allows steam to be discharged freely, so that a pressure of 10 lb. per square inch is not exceeded in the main C, as indicated by the pressure gauge F. The reduction in the pressure is brought about because the reduced quantity of steam which passes from A to C through the ¾-in. connecting pipe has a free outlet through the open valve H. But what would happen supposing the valve were shut down completely? In the course of a few seconds the pressure in C would rise considerably, and in a very short time it would be carrying a pressure equal to that in the main A. From the foregoing it will be clearly seen that to reduce the opening through which the steam may pass does not necessarily mean that the pressure is reduced also. Passing a reduced quantity of steam through a pipe is something entirely different from the pressure of steam within the pipe when all outlets are closed.

Reduction in Pressure—How it is Obtained.

Let it be supposed that a pressure reducing valve is set so as to give a pressure of 5 lb. per square inch on its outlet (low pressure) side; when that pressure is reached, the valve cuts off completely the supply of steam from the high pressure main, and so long as there is a pressure of 5 lb. per square inch on the outlet side, no additional supply of steam can pass through the valve and enter the heating system.

If the working of the arrangement shown by Fig. 5 is studied for a few moments, the manner in which a pressure reducing valve does its work will be more clearly understood. The sketch shows the section of an 8-in. high pressure steam main, which is connected by a 3-in. branch to a globe pattern stop valve fitted with a long handle. Connected to the outlet side of the stop valve is the 6-in. main of a heating system which is to carry a pressure of 5 lb. per square inch only; the pressure in the live steam main being 100 lb. per square inch. If a man were stationed at the stop valve, he could, by moving the long handle, open the valve and allow steam to pass into the 6-in. heating main until the gauge connected therewith registered a pressure of 5 lb. per square inch, when, by pushing the handle back to its original position, he could again close the valve, thereby cutting off the supply of steam. When the gauge indicated that the pressure in the heating main had fallen slightly, the man would again open the valve, once more closing it when a pressure of 5 lb. per square inch was again registered. This alternate opening and closing of the valve would sometimes keep a man very busy, since the supply of steam necessary would depend upon the rapidity with which the radiators lost heat. But if the pressure gauge were carefully watched the lower pressure desired could be satisfactorily maintained in the heating system by opening or closing the stop valve when-

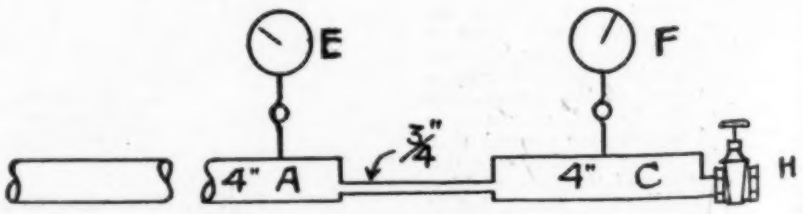


Fig. 4—Heating by Exhaust Steam.

ever required. If the stop valve were taken out, and a pressure reducing valve fixed in place thereof, the man would no longer be necessary, as the pressure reducing valve would open and close automatically as the pressure in the heating main fell below, or increased to, 5 lb. per square inch, consequently the supply of steam from the high pressure main to the heating main would be effectively controlled without human aid. When the pressure on the outlet side of a pressure reducing valve reaches that at which the valve is set to work, the valve closes and cuts off the supply of high pressure steam, but as soon as the pressure on the outlet (low pressure) side falls, the valve opens again, and an additional supply of steam passes through. The valve will continue to open and close in accordance with the variations of pressure on its outlet side.

If one or more of the engines which discharge their exhaust steam into the heating system are shut down for repairs, thereby cutting off (partly or wholly) the supply of exhaust steam, the pressure reducing valve will automatically allow steam from the high pressure main to pass into the heating system so that the deficiency may be made good.

Pressure reducing valves can be arranged to supply steam to vacuum heating systems. A vacuum heating apparatus is one in which the steam is generated below atmospheric pressure. Heating systems are now erected in which a vacuum is carried in the supply mains as well as in the return mains. When connected to heating systems of this type, a pressure reducing valve can be arranged so that it will supply steam whenever the vacuum in the supply mains falls below atmospheric pressure to the extent that has been decided upon; as soon as the vacuum has been sufficiently reduced the valve will close, and the supply of steam will be cut off for the time being.

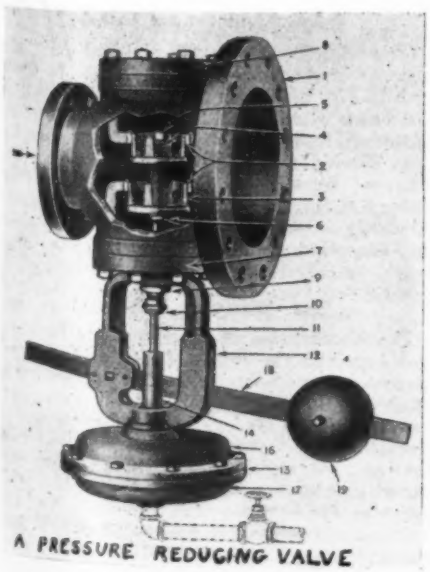


Fig. 6.

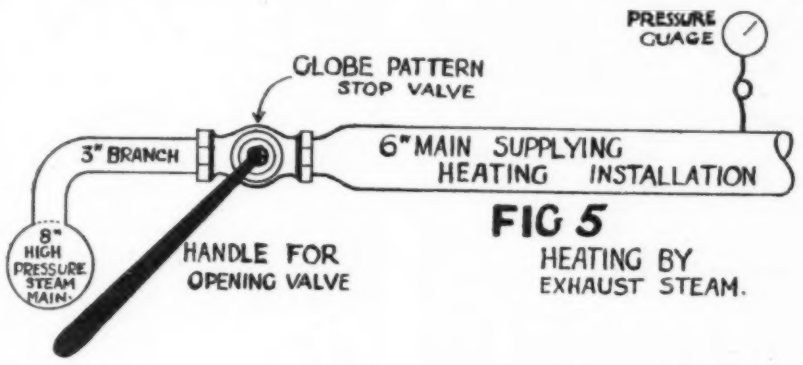


FIG 5

HEATING BY EXHAUST STEAM.

ELECTRICITY FOR HEATING AND LIGHTING

The time must come when Electricity will be for everyone, like the waters of the Earth and the winds of Heaven. It must be provided and provided liberally, enabling the people to use it as they wish like the air which they breathe.—ZOLA.

The wealth of epithet and metaphor to which the words "sunshine," "sunny," etc., have given rise in the languages of the world, give an indication of the realisation of the necessity to all forms of life of sunlight. Sunlight enables life: it provides heat, light and energy, without which life cannot go on. Heat and light, however, besides being essential to life, exercise a very great effect on the world's happiness. To study people's faces on a summer's warm day and to compare the cheerfulness and comparative hopefulness found on many faces with the dull inanimation so commonly found in mid-winter, is to realise the value of sunshine. Sluggish faces mean inactive minds, and for this reason, the necessity for adequate and proper heating and lighting in home and office cannot be too greatly emphasised.

Heat may be transmitted from a fire by two methods—radiation or convection. The process of convection is the actual warming of the particles of air, which travel in streams or current through the room; by the method of radiation, however, heat is emitted from the fire, and passes into the room, travelling in straight lines and *without* heating the air through which it passes. Of these two processes, undoubtedly the better is that of radiation. This may be explained by the fact that, as the temperature of the air in a room rises, so does its saturation point—that is, the extent to which it will hold water without condensation taking place—rise accordingly. To satisfy this increasing point of saturation, the heated air absorbs water from any and every source available, including the mucous membrane of the throat and nose, which is left in a dry and parched condition. Such heat gives out no energy, rather does it devitalise or vitiate the atmosphere. It is clear that work that is important—indeed, any work—cannot be accomplished under such conditions, and that a means of heating by radiation is advisable, and electricity is well adapted to this purpose. The progress during recent years of electricity for commercial and domestic use has been very great, and amongst the reasons for this progress may be counted the following:—First, a reasonable price per unit of power; secondly, the quality of the electrical fittings—lamps, radiators, electric cookers, etc., which, in efficiency, beauty and convenience, are irreproachable—and lastly, reliability. These points may well be considered in greater detail.

There has always been an abundant supply of electricity since the early years of its development, due to the immediate recognition of its possibilities. It is, however, to be made clear that there is little likelihood of any considerable lowering of the price of current, which at present compares very favourably with other forms of power, as regards unit cost. The impression that yet greater development and extensions of the field of action will result in a material reduction of the unit cost, is erroneous, since the expense of generating stations, sub-stations, and especially of cables and their laying, is large enough effectually to neutralise any reduction in price that might be expected from the extended use. Any saving in cost must, therefore, come from the other end, that is, in the apparatus in which the current is used, and this, indeed, is what is taking place. Figures that give a comparison of running cost of electrical apparatus with that occasioned by other forms of power, are out of place, but it may be taken that such comparison is not unfavourable.

The third point—that of reliability—is amply proved by the unfailing supply of current that is available wherever the electricity system exists. There are, however, other advantages which are of value, perhaps the most important being the total absence of combustion that prevails in the utilisation of electricity. This constitutes an immense advantage, as it does away with flues, while, in addition, the air of the room is not rarified. We have recently inspected some electric radiators which give off radiant heat and light analogous to sunlight, both in appearance and effect. We speak from experience when we say that these radiators—which are used throughout in a restaurant which we illustrate in this issue—produce a most beneficial and cheering effect almost as though one were walking on a summer's day. Children, always honest in their tastes, bask in its rays, which invigorate, in addition to warming. The radiators render possible the carrying-out in England of the sun-parlour, so popular in America, but unfortunately practically impossible hitherto in this country for reasons which are not deeply hidden. These "sunray" lamps are very definitely medicinal in their effect, but it seems to us that their use should not be looked upon as in the nature of being curative so much as being pleasant. We walk in the sun because we feel happy there and not because our brain has told us that it is time the body drank in ultra-violet rays: it is in the same light that these radiators should be regarded.

This is but one of the many uses to which electricity may be put. It may be used for cooking, refrigeration, cleaning, besides for running plant. Architects and contractors will do well to make intelligent inquiry into its future.

R.I.B.A. Statutory Examinations.

The R.I.B.A. Statutory Examinations for the office of District Surveyor under the London Building Acts, or Building Surveyor under Local Authorities, will be held at the R.I.B.A., London, on October 19, 20 and 21, 1927. Applications for admission to the examinations, accompanied by the fee of £3 3s., must be received at the R.I.B.A. not later than Monday, October 3. Full particulars of the Examinations and application forms can be obtained from the Secretary, R.I.B.A.

Memorial to Warwickshire Freemasons.

A Temple, erected by the Freemasons of the Province of Warwickshire as a memorial to Brethren who fell in the Great War, was opened on Friday last by the Pro. Grand Master, Lord Ampthill. The building provides three self-contained suites of Lodge rooms, and there is a handsome entrance hall and marble staircase. It has been built to the designs of Mr. Rupert Savage, F.R.I.B.A., and Mr. Gilbert Bayes has executed the sculpture on the Portland stone façade.

THE BUILDING TRADE

BUILDERS AND THE LEAD PAINT (PROTECTION AGAINST POISONING) ACT, 1926

THOUGH it is now some nine months since the coming into force of the Lead Paint (Protection against Poisoning) Act, 1926, it is to be feared that a certain number of master-painters and master-builders are yet in ignorance of the requirements of the Act, a supposition only strengthened by the recent convictions and subsequent fining of several decorating and contracting firms in England and Scotland on the grounds of non-compliance with the requirements of the Act. Every person who employs other persons in painting buildings, *whether lead paint is used in the work or not*, will do well to make a careful study of the Act with a view to fulfilling the necessary conditions. The full text of the Act, the Regulation regarding the carrying out of which comes into force on October 1 (to-morrow), was given in the issue of *The Builder* for December 31, 1926.

A report by Sir William Warrender Mackenzie, G.B.E., K.C., to the Home Office on "Draft Regulations for preventing danger from lead paint to persons employed in or in connection with the painting of buildings," has now been issued (price 3d. net) by H.M. Stationery Office, Kingsway, W.C. The following are extracts from the text :—

The disease of lead poisoning is frequently fatal and in its severe form is incapacitating. The chief source of the disease is caused by inhaling dust impregnated with lead. In the painting of buildings, more particularly in house painting, this arises mostly in rubbing down the surface of a lead-painted structure in order to get a fine and smooth surface for re-painting. There is also an element of danger when paint gets into the workman's clothes and is not at once removed; the paint becomes dry, and then is brushed off in the form of dust and is liable to be inhaled. In a less degree there is some risk of lead paint getting into the human system by the operative, who has been in contact with lead paint, eating food with dirty hands, or possibly by absorption through the skin. Regulation 3 (*a*) is framed with the object of eliminating lead dust. It provides that "No painted surface shall be rubbed down or scraped by a dry process." The purpose of this draft Regulation is to place upon the employer the duty of rubbing down a painted surface by a wet process. Hitherto it has not been practicable to rub down wet with ordinary sand paper, as the paper rubs through as soon as it becomes wet. Now, however, a new form of sand paper has been produced in which the paper is water-proof. "Burning off" is not regarded as coming within the terms of Regulation 3. The effect of using a liquid—whether water, spirit or a lubricant—on the painted surface varies according to the nature of that surface. In the case of stone, brick or timber buildings the rubbing down can, generally speaking, be equally effectively done by dry or wet process; but the effect of rubbing down a painted surface of iron or steel work by a wet process is to set up corrosion of the iron or steel, and if oil is used there is a tendency to create a filmy lining on which the new paint will not adhere. It was therefore contended that Regulation 3 (*a*) of the draft Regulations was impracticable in respect to iron and steel surfaces of the nature found in the roofs of railway stations, locomotive sheds, bridges, constructional engineering units, etc. Three classes of employers took exception to the application of a wet process in rubbing down the painted surface of iron and steel work, namely (1) the Railway Companies, (2) the Constructional Engineers, and (3) General Engineers, Shipbuilders and Iron and Steel Manufacturers. The Railway Companies are concerned with iron and steel work in roofs of railway stations and locomotive sheds, bridges, etc.; the Constructional Engineers in girders, columns, roof trusses, etc., for new buildings, and Engineers generally, Shipbuilders and Iron and Steel Manufacturers in maintenance work in their factories, workshops and plants. In his evidence Sir Gerald Bellhouse suggested that an exemption might be introduced in Regulation 3 (*a*), which would exclude the removal of paint from iron and steel by chipping, scraping or brushing with a wire brush, but not rubbing down by sand paper; and expressed the opinion that the health of the worker would not be imperilled by such an amendment. The dust from wire brushing is coarser and less likely to be inhaled than dust arising from rubbing down with dry sand paper. The decision of Sir W. W. Mackenzie upon this point is that—"It appears that when the Regulations now under consideration were originally drafted in 1922 and re-discussed in 1927, the actual position of rubbing down lead-painted surfaces of iron and steel work by dry process was not considered. The evidence adduced at the Inquiry showed the great difficulty, if not impossibility, there was in cleaning and repainting iron and steel construction work in the event of dry rubbing down and scraping being absolutely prohibited. The Geneva Convention excepted from prohibition white lead, etc., where its use was considered necessary for railway stations or industrial establishments by the 'competent authority' after consultation with the employers' and workers' organisations concerned. Although, according to the evidence, there is an element of danger in dry rubbing down of lead-painted iron and steel surfaces with a wire brush under cover, apparently no case of lead poisoning has been directly traced to the operations of rubbing down these surfaces. I think, therefore, at least as a tentative measure, the suggestion made by Sir Gerald Bellhouse should be given effect to, and I recommend that Regulation 3 be amended accordingly." The railway companies did not submit any objections to any of the other Regulations, and did not claim exemption from the Regulations generally with regard to the painting of such buildings as hotels, waiting rooms, etc., or of fencing and railings. Exception was taken on behalf of the Engineering and Allied Employers' National Federation, the National Federation of Iron and Steel Manufacturers, and the Shipbuilding Employers' Federation to Regulation 4 (*b*), which provides:—"Five minutes shall be allowed to each such person for washing before each meal time and before leaving work." The main grounds of objection were:—(1) Where maintenance men are regularly employed on painting work it would upset the discipline of the factory if they were to have the right to stop five minutes before the usual stopping time, and the other workmen who have no such right will at once slack off. (2) There is no similar provision in the Vehicle Painting Regulations, and where vehicle painters and maintenance painters are employed in the same factory (as they sometimes are) the proposed Regulation would cause dissatisfaction and unrest. (3) the proposed Regulation will add to the manufacturing cost of the industry. (4) Such a Regulation would be *ultra vires* in that the provision of five minutes is not necessary to prevent danger to persons employed in or in connection with the painting of buildings.

It was contended *contra* that the granting of a period such as five minutes is common throughout the painting industry, and when painting operatives from the painting industry are employed in engineering, shipbuilding and iron and steel establishments on painting work a period of five minutes or other reasonable time is allowed. The decision of Sir W. W. Mackenzie on this point is:—"The circumstances of the present case are special, and it seems to me best to allow the matter to be dealt by mutual agreement and not by statutory regulation. I, therefore, find that the case for Regulation 4 (*b*) had not been established and should be omitted from the Regulations."

It was contended on behalf of the Engineering and Allied Employers' National Federation that machinery, which might be regarded as "fixtures," should be excluded from the operation of the Regulations. Mr. Harney submitted that the Bill originally included "buildings" only, but Parliament extended it to "fixtures," the object being to bring in large machinery which is part of the premises, and that to exclude machinery from the Regulations would tend to defeat the object of the Act. The decision on this point is that "the Regulations should, if possible, avoid questions of legal nicety and difficulty; but it appears that Parliament by amendment introduced 'fixtures' into the Bill, and it would be flying in face of Parliament to frame Regulations excluding machinery from the category of fixtures without cogent reason, and none has been shown." In conclusion, Sir W. W. Mackenzie writes:—"Regulations 1 (*a*) and (*b*) have been recast in order to carry out the objects of the Act more effectively. Several amendments have been made in some of the Regulations, other than those already specifically mentioned, mostly of a drafting nature. Doubt was expressed as to the meaning and effect of 'prescribed' leaflet in Regulation 7 (*a*). By virtue of Section 31 of the Interpretation Act, 1889, expressions used in regulations made under an Act of Parliament have the same meaning, unless the contrary appears, as in the Act conferring the power to make them (Cf. Reg *v.* Walker (1875), L.R., 10 Q.B., p. 358). The Act of 1926 (see Section 8), under which the Regulations (now under consideration) are made, is to be construed as one with the Factory and Workshop Acts, 1901 to 1920; and under Section 156 (1) of the Factory and Workshop Act, 1901, 'prescribed' means prescribed for the time being by the Secretary of State. 'Prescribed' leaflet in Regulation 7 (*a*) means, therefore, a leaflet prescribed by the Secretary of State."

Cotswold Slates for U.S.A.

Over 200,000 Cotswold slates during the past ten months have been packed in cases with Bedford sand, and shipped to New York for Lake Michigan, to roof a mansion and other buildings. The casing and packing has been carried through by Mr. W. Cox Howman, of Stow-on-the-Wold, whose foreman slater has for the last six months been on the job, superintending the laying. The slates were supplied from the Eyford Hill, Huntsmans, and Southdown Quarries.

The Quarrying Industry.

The importation of foreign stone for roads was urged as the cause of lack of orders and increasing unemployment in the roadstone quarrying industry at the recent meeting in London of the Federated Quarry Owners of Great Britain. A report was received from the east of Scotland that one quarry had closed its stone-crushing plant. At two other quarries there were large stocks and no orders, and dismissals were likely. It was stated that in England and Wales the quarrying industry, including chalk, was suffering from foreign importations.

BUILDING CONTRACTS

By W. T. CRESWELL, Barrister-at-Law, A.R.I.B.A., Assoc. (late Fellow) Surveyors' Institution.

Oral Agreements for Building Works.

A goodly number of building works are commenced without the formality of any agreement or contract being previously entered into between the employer and the builder employed. In some instances which have come within the writer's experience, there has not existed even a scrap of paper or documents of any kind which might enable one to form an idea of what was originally intended by either or both of the parties. Nevertheless in most instances it is not difficult to show that there was in fact an agreement of some sort entered into between them; other an oral agreement which, however difficult it may be to prove the precise intentions of both parties at the outset, yet nevertheless may be proved to have existed by reference to the action and conduct of the parties prior to, and during the continuation of, the building work. Proof is more easily established if some sort of documents can be brought to light and linked together to show the intentions as, for instance, a written tender referring to a written specification or drawing, or a written acceptance of the tender if the essentials to a contract are present.

Unless, however, the building contract is carefully written out and meticulously signed, disputes almost invariably arise as to what was intended and included in the contract. There is a special likelihood of questions as to the right to payments for "extra" works, and as to what is included in the term "build" and the term "complete."

At such a juncture an architect or surveyor is often called on by the employer to adjust matters, but although a builder may be pleased to accept this course as a ready means to a settlement, he is not bound to recognise the architect's or surveyor's decision as final and binding.

It is true that the employer has an undisputed right to vary the terms of the agreement during the course of the work according to his wishes, but such variation may involve "revolution," or even a breach of the original agreement if not carefully provided for by the contract in writing. In general a contract can only be varied, altered, or rescinded by both the parties thereto.

Since what is fixed on the land remains the property of the employer, or rather that of the owner of the land, if the employer refuses to pay what is reasonably due to the builder, the latter is compelled (if he determines to recover) to seek redress in the Court, when what is reasonably due will be awarded him.

However, the differences arising between employers and builders are in most instances more conveniently determined by arbitration, whether the agreement be oral or written. The refusal of the employer to pay the builder anything on account of work done in the absence of any conditions as to interim payments does not entitle the builder to leave the work before complete, unless definitely obstructed by the employer he must first complete the work before he can sue for breach of the contract. This still applies even if there is an agreement and that also in writing for payment by instalments and the employer yet fails to pay promptly. Such failure is not a lawful excuse for non-performance or abandonment of the work, unless *prompt* payment is an express condition of the contract. It must further be proved that the employer's delay in paying is unjustifiable. The builder must be able to show to the Court that he has at all times been willing to perform, and that he has, in fact, honestly performed his part of the contract in so far as he has not been prevented by the employer from doing so. Therefore in order to put himself in the best possible position to establish in Court his claim for what is due to him (and damages arising therefrom) he should complete the work first. If the employer prevents him from doing so, as for instance by employing another builder to complete and refusing to pay, his conduct may be regarded by the Court as a recession of the contract; and as evidence of his intention to abandon, or an incapacity to perform his part of the contract. In the case of a lump sum or entire contract, the builder would be entitled to claim the whole price for the work as a liquidated demand.

The final word is, building work should not be begun until a written contract is entered into between the parties.

DR. BARNARDO'S HOME

Building Trade Appeal.

We have much pleasure in publishing, at the request of Mr. Frederick Higgs, and with the grateful thanks of the whole Committee, the following list of subscriptions received since the date of our last list published on May 13th, 1927, in support of the building trade effort to provide additional buildings to celebrate the Diamond Jubilee of Dr. Barnardo's Homes :—

	£	s.	d.
Amount previously acknowledged	605	17	0
The London Brick Co. & Forders, Ltd. ..	50	0	0
Ferguson, G. & Son, Ltd.	25	0	0
Neal, H., Ltd.	25	0	0
Martin Van Straaten & Co.	20	0	0
Higgs, F. & H. F., Ltd. (Joint Collection) ..	14	7	0
Lawton, A. (collected per)	13	5	0
Stewart, J. & W., Ltd.	11	14	4
Cement Marketing Co., Ltd.	10	10	0
Grace & Marsh, Ltd.	10	10	0
Prestige & Co., Ltd.	10	10	0
Nibloc Syndicate	10	0	0
Yates, W. T.	10	0	0
Costin, F. & C.	5	5	0
Cakebread Robey & Co., Ltd.	5	5	0
Champion, A. W., & Sons	5	5	0
Edser & Brown, Ltd.	5	5	0
Ingram, F. J. C.	5	5	0
Minute Estate Office	5	5	0
Mullen & Lumsden	5	5	0
Pratt, E.D.	5	5	0
Stevens, T., Ltd.	5	5	0
Whitehead, F. W.	5	5	0
Yates, E. C.	5	5	0
Carshalton Ex-Service Men's Prov. Society	5	0	0
Fairhead & Sons, Ltd.	5	0	0
Galbraith Bros.	5	0	0
Montgomery, J.:	5	0	0

£4 4 0.—Lyne, A., & Sons.

£3 3 0.—Cole, Thos.; King, A. J.; Monk, Albert; Miskin C.; Robinson, A. F., & Co.; Smith, E. H.; Smith, Jas., & Sons.

£2 10 0.—Compton Bros.

£2 2 0.—Andrews, W., & Sons; Bridge & Co; Betts, Slade; Brand, P. E., Ltd.; Cawley & Son; Crossley, T., & Sons; Day, C. F.; Day, G.; Dean & Co.; Everitt & Son, Ltd.; Faulkner, Walter; Fuller & Griffin; Gibson, C. H., Ltd.; Greenwood, G., & Sons; Harrison, J. & Co.; Hammond & Hussey; Harrison & Co.; Hill & Gurr; Hurst, Mr. (Trollope & Colls); Kinnaird, H.; Rutter, T., & Son; Truett & Steel, Ltd.; Vickers, E. A., & Son; Ward, F., & Sons.

£2 0 0.—Moreton, F. J., & Sons.

£1 11 6.—Wade, Archer & Co.

£1 2 9—Miskin, C., & Son.

£1 1 0.—Attwood, C. F., Ltd.; Baker & Sons; Bull & Esdale; Bragg, H., & Sons, Ltd; Coombs, A. W.; Christman, E.; Curtis, F. N.; Elliman, J., & Sons; Efficient Transport Co.; Furness, R., & Co., Ltd.; Fuller, F., & Sons; Gurney Bros.; Green, Geo.; Harding, H. D.; Hood Marshall, Ltd.; Higgins, P. H.; Hewett, R., Ltd.; Hyam, J., & Sons; Huncheliffe Bros.; Harris, N., & Sons; Hawkes, H. P.; Ingram, G. W. S.; Johnson, A. D.; Johns Bros.; Kemp, D. H., & Co.; King, A.; King, W. A., & Co.; Kidd, J.; Little, F. D.; Monckton, H. & Sons; Nunn, C. H. S., Ltd.; Norman, H. W.; Oldby, A., & Sons; Oldman, F. J., & Sons; Peddle, E., & Son, Ltd.; Pady, E.; Peacock, A. E.; Roberts, T. R., & Co; Randall, T.; Rice & Son; Reynolds & Nicholls; Richardson, A. W. T; Stratton, F. W.; Shurmur, Wm., & Sons, Ltd. Short, E. J.; Sanderson, A., & Sons, Ltd.; Stevens, S. E., & Sons; Smith & Owen; Sheffield, B. W.; Somerford, H., & Son, Ltd.; Sweeting, R., & Son; Smith, E.; Simpson, A. F.; Shapcott, A.; Sanders, A., Ltd.; Taylor, A. G.; Woodham, W.; Willson, W; & Co.; White, F.

£1.—Avis, C. E.; Black, A., & Sons; Coulter, Geo. & Co.; Combes, E.; Lynn, W. F., & Co; Malpress & Co.; Munn, F.; Simmonds, F. A.; Thornhill Joinery & Saw Mills, Ltd.; Weeks, G., & Sons.

10s. 6d.—Almond, Herbert; Andrews & Andrews; Brown, T., & Sons; Butler, T.; Bourne, R. W., & Sons; Crossley, H.; Cross, L. M.; Groves & Sons; Horswill H. C., Ltd.; Knighton, H. G.; King & Stannard; Pead, J. W., & Sons; Podger, A.E., & Sons; Swinden & Co.; Treasure, H. T. S.; Weatherill, S. O.

10s.—Antill, S.; Athey, S.; Blaxhill Bros.; Boswell, C. D.; Baughan, T.; Boughton, T.; Bevan, G.; Elgar, Chas., & Sons; Gasson, L.; Goad, A. V.; Glendinning, W. M.; Harman, H.; Hawkes, J.; Lawrence, F. & Sons; Marsh & Sons; Northcott Bros.; National Wallpaper Co.; Nash, E. A.; Palmer, W.; Pearce Bros.; Sawyer, E., & Co.; Silk & Son; Spender, A. C.

5s.—Cole, E. C.; Combes, A.; Clark, P. S.; Crosby Harry; Fowler, Gore & Co.; Field, W. B.; Humphries, S.; Harding & Marks; Hosling, C. S., & Son; Laird, J.; Oldman, A. W.; Pratt, C. P.; Shaw, S.; Smith, Thos.; Tottingham, F. W.; Thrower, H.

2s. 6d.—Bangs & Co.; Hudson & Co.

Total, **£1,074 7s. 7d.**

Our apologies are due for the omission in the last list of the name of the Limmer and Trinidad Lake Asphalte Company, who executed the asphalte work at the Acacia Road headquarters, free of charge.

NEW BUILDINGS IN LONDON

Addiscombe.—HOUSES.—Sixty-four houses are to be erected at Nursery Close and Nursery-avenue, Croydon, by Mr. P. Richardson, of 136, Addiscombe-road.

Canning Town.—STATION.—The reconstruction of the old Thames Ironworks, Canning Town, into a modern shipping station, has now commenced. The directors of S. Instone and Co., Ltd., have leased the site from the L. and N.E.R. Co., and are having extensive alterations and additions made.

Chelsea.—ENLARGEMENT.—The Kensington Borough Council has received a communication from the Managers of the Oratory Central (R.C.) School, Stewart's-grove, Chelsea, forwarding a formal notification of their intention to enlarge the school so as to provide additional accommodation for about 160 children.

Coulsdon. — HOUSES. — Messrs. J. H. Thompson and Sons, Ltd., of Grimsby, are to erect 50 houses in Westleigh-avenue, Coulsdon, for the Coulsdon and Purley Urban District Council. The houses are to cost £21,979.

Croydon.—HOUSES.—Messrs. Thomas & Son, of Bramley-avenue, Coulsdon, are to build 44 houses in Biggin Wood-road, Croydon.

Croydon.—SCHOOL.—Messrs. G. H. Everitt & Sons, Ltd., of Croydon, have secured the contract for the erection of Long-lane school for the local Council. The price for the tender is £13,013.

Croydon. — EXTENSIONS. — The Croydon County Borough has approved the estimate of the Borough Engineer to erect extensions to the Central Library. Tenders are to be invited, and application is to be made to the Ministry of Health for sanction to borrow £18,000, which is the estimated cost of the work.

Hammersmith. — EXTENSION. — Work has started on the extension of Cadby Hall, W., the premises of Messrs. J. Lyons and Co. The site of the new building is in Blythe-road. A large block of premises is to be demolished. Most of the work is being carried out by Messrs. Lyons' own building departments

Kensington.—REBUILDING.—The Kensington Borough Council are proposing to rebuild and enlarge the Central Library in Kensington High-street, and also extend the Town Hall.

Lambeth.—BUILDING.—A new building is to be erected on the north side of Cleaver-street, Lambeth, for H.M. Office of Works. The Lambeth Council has passed the plans.

Lewisham.—HOUSES.—Mr. J. G. Stephenson has submitted plans to the local Council for a further 99 houses on the Downham estate, for the London County Council.

Shepherd's Bush.—EXTENSIONS.—Detailed plans are now being drawn up for the Board of Trade to provide for the alterations and extensions which are to be carried out in the various exhibition halls at the White City.

Shepherd's Bush. — EXCHANGE. — H.M. Office of Works are inviting tenders for the erection of a telephone exchange at Shepherd's Bush, W.12.

Stoke Newington. — BATHS. — The Stoke Newington Borough Council has decided to acquire a site at the corner of Clissold-road and Church-street for a new swimming bath, and not the site in Albion-road. Though the site has been changed, the scheme remains unaltered

Thornton Heath.—CHURCH.—The Vicar of St. Paul's, Thornton Heath, has received the Croydon T.C.'s permission to utilise a site at the corner of Green-lane and St. Oswald's-road for the purpose of the erection of a church and parish hall.

Thornton Heath.—BATHS.—The Croydon Council has decided to proceed with the erection of the Thornton Heath Baths. The Borough Engineer is to prepare the plans and estimates.

RATES OF WAGES IN THE BUILDING TRADE

[Every endeavour is made to ensure accuracy but we cannot be responsible for errors.]

	Masons	Bricklayers.	Carpenters Joiners	Plasterers.	Slaters.	Plumbers.	Painters.	Labourers.
Aberdare	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Accrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Alfreton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Alnwick	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Altrincham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Ashford (Kent)	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Ashington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Ashton-under-Lyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Aylesbury	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Aylsham	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Banbury	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Barnsley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Barnstaple	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Barrow-in-Furness	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Barry	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Basingstoke	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Bath	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Bedford	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Berwick	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bexhill	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Birkenhead	1/10	1/10	1/10	1/11	1/10	1/10	1/9½	1/4½
Birmingham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bishop Auckland	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Blackburn	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Blackpool	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bolton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bournemouth	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Bradford	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bradford-on-Avon	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/0½
Braintree	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Brentwood	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bridgwater	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Bridlington	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/2½
Brighton	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Bristol	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bromsgrove	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bromyard	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0½
Bungay	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Burnley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Burton-on-Trent	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Bury	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Buxton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Cambridge	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Canterbury	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Cardiff	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Carlisle	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Chatham	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Chelmsford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Cheltenham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Chester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Chesterfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Chorley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Cirencester	1/5	1/5	1/5	1/5	1/5	1/5	1/4	1/1
Clacton	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Colchester	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Coventry	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Cranbrook	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Crewe	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Cromer	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Darlington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Deal	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Denbigh	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Derby	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Devizes	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/0½
Dewsbury	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Doncaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Dorchester	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/0½
Dorking	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Dovercourt	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Driffield	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Droitwich	1/6½	1/6½	1/5½	1/6½	1/6½	1/6½	1/6½	1/2
Dudley	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/2½
Durham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Eastbourne	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
E. Glam. (Mon. Val.)	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Ely	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Exeter	1/7	1/7	1/7	1/7	1/7	1/7	1/6	1/2½
Exmouth	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Fakenham	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Felixstowe	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Folkestone	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Frome	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Glossop	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2½
Gloucester	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/5½	1/2
Godalming	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Goole	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Gosport	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Grantham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Great Yarmouth	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Grimsby	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Guildford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Halifax	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Harpenden	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Harrogate	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Hartlepools	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Harwich	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Hastings	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Hatfield	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Hednesford	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Hereford	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/1½
Herne Bay	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Hertford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Hitchin	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Hoddesdon	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Holt	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Huddersfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Hull	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Hunstanton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Huntingdon	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Isle of Wight	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0½
Ipswich	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Keighley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Kettering	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Kidderminster	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
King's Lynn	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Lancaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Leamington Spa	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Leeds	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Leicester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Leighton Buzzard	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Lichfield	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Lincoln	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Littlehampton	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Liverpool	1/10	1/10	1/10	1/11	1/10	1/10	1/9½	1/4½
Llandudno	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Llanelly	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
London:								
12 m. radius	1/9½	1/9½	1/9½	1/9½	1/9½	1/9½	1/8½	1/4½
12–15 m. radius	1/9	1/9	1/9	1/9	1/9	1/9	1/8	1/4
Loughborough	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Lowestoft	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Luton	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Macclesfield	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/2½
Maidstone	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Malvern	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Manchester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Mansfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Margate	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Market Harb'rough	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Matlock	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Melton Constable	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Melton Mowbray	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Merthyr Tydfil	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Middlesbrough	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Newark	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Newbury	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Newcastle-on-Tyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Newcastle-ur-Lyme	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
New Forest	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Newmarket	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Newport, Mon.	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Northampton	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Norwich	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Nottingham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3
Nuneaton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Oakham	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Oldham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Oxford	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Paignton	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Peterborough	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Plymouth	1/8	1/8	1/8	1/8	1/8	1/8	1/7	1/3½
Pontypridd	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Portsmouth	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Preston	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Ramsgate	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Reading	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Redcar	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Redditch	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Reigate	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Retford	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Ripon	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Rochdale	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Rochester	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Rugby	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Saffron Walden	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
St. Albans	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
St. Helens	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3
Sawbridgeworth	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Saxmundham	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0½
Scarborough	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/2½
Sevenoaks	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Sheffield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Shrewsbury	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Sittingbourne	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Southampton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Southend-on-Sea	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Southport	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
South Shields	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Stevenage	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Stockport	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Stockton-on-Tees	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Stoke-on-Trent	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Stourbridge	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Stourport	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Stowmarket	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Stratford-on-Avon	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Stroud	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5	1/1½
Sunderland	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Swaffham	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Swansea	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Swindon	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/1½
Tamworth	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/2½
Taunton	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Thetford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Torquay	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Totnes	1/5	1/5	1/5	1/5	1/5	1/5	1/4½	1/1
Trowbridge	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/0½
Tunbridge Wells	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Uttoxeter	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Wakefield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Walsall	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/2½
Wallsend	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Warminster	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Warrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Warwick	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Wells (Norfolk)	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Welwyn. Gar. City	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
West Bromwich	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Weston-sup.-Mare	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Weymouth	1/5	1/5	1/5	1/5	1/5	1/5	1/4	1/1
Whitby	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Wigan	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Winchester	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Windsor	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Wisbech	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Wolverhampton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Woodbridge	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Worcester	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Worksop	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Worthing	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/1
Wrexham	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/2½
Wroxham	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Wymondham	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0½
York	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½

(For rates of wages in the Building Trade in Scotland see page 522.)

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed, that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in; the name and address at the end is the person from whom or place where quantities, forms of tender, &c., may be obtained.

Following is a list of abbreviations:—Borough Surveyor, B.S.; Borough Engineer, B.E.; District Surveyor, D.S.; Clerk, C.; Town Clerk, T.C.; County Engineer, C.E.; County Surveyor, C.S.; County Architect, C.A.; Surveyor, S.; Engineer, E.; Borough Architect, B.A.; Architect, A.

BUILDING, PAINTING, ELECTRIC LIGHTING, HEATING, ETC.

OCT. 3.—**Acton.**—PAINTING.—For work at public baths, Salisbury-st.: (1) painting and repairs to exterior; and (2) repairs to roof of second-class swimming bath, for T.C. B.E. Dep. £1 1s.

OCT. 3.—**Bedwas and Machen.**—20 non-parlour type houses on Bryn-y-fran site, Trethomas, Mon., and construction of the necessary road and sewers for U.D.C. Idris Leyshon, A.

OCT. 3. — **Bury St. Edmund's.** — COTTAGES. — Three blocks of cottages, comprising 10 houses, in Westgate-rd., for T.C. R. H. Beaumont, B.S. Dep. £2 2s.

✱OCT. 3. — **Devonport.** — HOUSES, ROADS and SEWER WORK.—Erection of 134 houses and the carrying out of streets and sewer works in connection therewith at St. Budeaux, near Plymouth, for the Devonport Dockyard Employees' Housing Association. H. J. Hammick, L.R.I.B.A., 7, Cornwall-st., Plymouth. Dep. £1. (Cheque payable to the Secretary, Davenport Dockyard Employees' Housing Association, Ltd.)

OCT. 3.—**Inverurie.**—BUNGALOW.—At Manar, Inverurie. D. Matheson, F.R.I.B.A., architect, Dingwall.

OCT. 3.—**Kent.**—SCHOOL.—Erection of a new Central school at Queenborough, for the Kent Education Committee. County architect (W. H. Robinson, F.R.I.B.A.), Room 69, Sessions House, Maidstone. Dep. £2 2s. in the form of a cheque payable to the Kent Education Committee, and crossed "National Provincial Bank, Ltd."

OCT. 3.—**Liverpool.**—PAINTING.—External at Liverpool Institute, Mount-st., for T.C. Land Steward and Surveyor.

OCT. 3.—**Meriden.**—HOUSES.—10 parlour and 10 non-parlour at Berkswell; four parlour and four non-parlour at Marston-Green; two parlour and two non-parlour at Over Whitacre, for R.D.C. H. Pickering, S. Dep. £2 2s.

OCT. 3.—**Sleaford.**—FENCING.—Provision and erection of an iron fence along the frontage of the Wilsford housing site, for R.D.C. E. H. Sills, L.R.I.B.A.

OCT. 3.—**Sunbury-on-Thames.**—PAINTING.—Also distempering and small repairing at 12 houses in Manor-la., and 26 houses in Allen-rd., for U.D.C. E. Beeching, C.

OCT. 3.—**Thornhill.**—PAINTING.—Interior of Thornhill, Lees, Working Men's Club. Secretary.

OCT. 4. — **Birmingham.** — IMPROVEMENTS. — For (a) terrazzo flooring, and (b) plastering, at Erdington House, for B.G. C P. Beech, C., Union Offices. Dep £2 2s.

OCT. 4. — **Bradford.** — HOUSES. — 366 houses on housing scheme No. 6, Eccleshill, for T.C. City A.

OCT. 4. — **Brentwood.** — CONVERSION. — Of certain buildings at sewage works, Nag's Head-lane, into a house for Brentwood and Billericay Joint Sewage Works Committee. G. A. Joslin, architect, 22, High-st. Dep. £1.

OCT. 4. — **Cambridge.** — WORKSHOPS AND ADDITIONS.—Erection of, to staff's rooms at the Cambridge and County High school for boys. County Architect, County Hall, Cambridge.

OCT. 4.—**Chesham.**—DECORATION.—Interior of houses on housing estate for T.C. B.E.

OCTOBER 4.—**Dartford.**—PUBLIC CONVENIENCES.—Erection of, for the Dartford U.D.C. J. James Hurtley, Clerk to the Council, Council Offices, Dartford. Dep. £2 2s.

OCT. 4.—**Forgue.**—EXTENSION.—New latrines and extension of playground in Largue school, Forgue, for Aberdeenshire E.C. W. L. Duncan, architect, Turriff.

OCT. 4. — **Ireland.** — SCHOOLS. — At Cockill (St. Mary's), Tirconaill; Sladran (St. Oran's), Tirconaill; Carrowmenagh (St. Patrick's), Tirconaill; Bunaninver, Tirconaill, for Commssioners of Public Works. T. Cassedy, secretary, Office of Works, Dublin. Dep. £1 each.

OCT. 4. — **Leeds.** — SHEDS. — Steam wagon sheds and messroom, etc., at Pottery Field depot, Jack-lane, for T.C. Jones & Stocks, architects, 56 Prudential-buildings. Dep. £1.

✱OCT. 4.—**Liverpool.**—NEW ABATTOIR.—General building contract, for the Corporation of Liverpool. Land Steward and Surveyor, Municipal Buildings, Liverpool.

OCT. 4. — **London.** — INTERNAL PAINTING, CLEANING, ETC.—At Cornwall House, Stamford-st., S.E., for the Commissioners of His Majesty's Office of Works. Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners).

OCT. 4. — **Newtown.** — ALTERATIONS. — Also additions and improvements at Poor Law Institution, Caersws, for B.G. A. S. Hill, architect, Severn-sq. Dep. £2 2s.

OCT. 4. — **Prestwich.** — HOUSES. — Nine "A 2" type brick houses on Flashfield estate, for U.D.C. M. A. Piercy, architect and surveyor. Dep. £1 1s.

OCT. 4. — **Prestwich.** — HOUSES. — Ten "B" type, 32 "A" type and 20 "A 2" type brick houses on Langley estate, for U.D.C. M. A. Piercy, architect and surveyor. Dep. £2 2s.

OCT. 4. — **Whimple.** — ADDITIONS. — Also alterations and repairs, etc., at Council school, for Devon E.C. C.A., 97, Heavitree-rd., Exeter.

OCT. 5. — **Carshalton.** — ELECTRIC LIGHTING. — Alterations to electric lighting installation at Queen Mary's Hospital, for M.A.B. T. Cooper, Engineer-in-Chief, Office of Board, Victoria-embankment, E.C.4. Dep. £1 1s.

OCT. 5.—**Drim Island.**—ENLARGING.—Drim Island National School, Co. Galway, for Commissioner of Public Works. T. Cassedy, Secretary, Office of Public Works, Dublin. Dep. £1.

OCT. 5.—**Herne Bay.**—ALTERATIONS.—Also additions to existing hot-water supply apparatus at St. Anne's Home, for M.A.B. Chief Engineer Offices of the Board, Victoria-embankment, E.C.4. Dep. £1.

OCT. 5. — **London.** — ALTERATIONS AND CONVERSIONS. — 1, erection of verandah and balcony and internal alterations at Highwood hospital for children, Brentwood, Essex; 2, conversion of existing building into staff bungalow at Brook fever hospital, Shooters Hill, S.E. 18, for the Metropolitan Asylums Board. Office of the Board, Victoria Embankment, E.C. 4. Dep. £1 in respect of each work.

OCT. 5. — **London.** — EXTERNAL PAINTING. — At the Natural History Museum, Cromwell Road, S.W., for the Commissioners of His Majesty's Office of Works, Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

OCT. 5. — **Neath.** — HOUSES. — 50 parlour type, with sewers and road works, on Brynhyfryd-rd., site, for T.C. H. Alex. Clarke, B.E. Dep. £3 3s.

OCT. 5.— **Tottington.** — CONVERSION. — Of closet conversion for U.D.C. Sanitary Inspector.

OCT. 6.—**Dublin.**—RECONSTRUCTION WORK.—At Land Registry, for Commissioners of Public Works. T. Cassedy, secretary, Office of Public Works. Dep. £1.

OCT. 6.—**Dublin.**—LODGE.—For resident pupils at Botanic Gardens for Commissioners of Public Works. T. Cassedy, secretary, Office of Public Works. Dep. £1.

OCT. 6. — **Grimsby.**—ADAPTATION OF PREMISES.—In Cleethorpe-rd., Grimsby, to form an Employment Exchange, for the Commissioners of His Majesty's Office of Works, Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

✱OCT. 6. — **London.** — CLEANING, REPAIRING, PAINTING, ETC., to exterior of Guardians' Offices, 283, Tooley-st., London, S.E.1., Parish of Bermondsey. Henry H. Reeve, Clerk, at above offices, between the hours of 10 a.m. and 12 noon, from Oct. 3 to 6. Dep. £5 Bank of England Note.

OCT. 6. — **Manchester.** — ELECTRIC LIGHTING. — Installation at Victoria-av., Municipal school, Blackley, for E.C. P. M. Heath, T.C. Dep. £1 1s.

OCT. 6.—**Warrington.**—HOUSES.—98, on Bewsey estate, for T.C. A. M. Ker, B.E. and S. Dep. £2 2s.

OCT. 6. — **West Ham.** — LODGE. — Porter's lodge at Children's sanatorium, Langdon Hill, Essex, for C.B. B.E. Dep. £1.

OCT 7.—**Acton.** — PAVILION. — Erection of, at the North Acton Playing Fields for the Acton Town Council. Borough Engineer, Municipal Offices, Acton, W.3. Dep. £1 1s., made payable to the Borough Treasurer.

OCT. 7. — **Croydon.** — RECONSTRUCTION. — Also re-decoration of portion of Old Headquarters' Building at the Barracks, Mitcham-rd., for Territorial Army Association. Jarvis & Richards, A.F.R.I.B.A., 60, Tufton-st., S.W.1. Dep. £2 2s.

OCT. 7.—**Godalming.**—TELEPHONE EXCHANGE.—Erection and completion of, at Godalming for the Commissioners of His Majesty's Office of Works. Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

OCT. 7. — **Gravesend.** — NEW OUT-PATIENTS' BLOCK.—Erection and completion of to the hospital in Stuart-rd., Gravesend, for the Committee of Management. The Secretary, Gravesend and North Kent Hospital, Gravesend. Dep. £2 2s.

OCT. 7.—**Liverpool.**—EMPLOYMENT EXCHANGE.—Erection of, at Liverpool for the Commissioners of His Majesty's Office of Works, Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

OCT. 7. — **Pendleton.** — PLASTERING, etc.—Execution of the work of plastering, etc., of Pavilions A, B, C, E, F, G, H, and part of D, of the Salford Union Infirmary, Stott-lane, Pendleton, for the Salford Board of Guardians. E. H. Inchley, Clerk, Poor Law Offices, Eccles New-rd., Salford.

✱OCT. 7. — **Stoke-on-Trent.** — HOUSES. —Erection of 198 on the Stoke Lodge site, Trent Vale, Stoke-on-Trent, for the Sutton Dwelling Trust. Contractors may tender for the whole or portion of the number (but not less than 20 houses). A. R. Scrivener, architect, etc., Howard-pl., Hanley, Stoke-on-Trent. Dep. £2 2s.

OCT. 8. — **Gunthorpe.** — DEMOLITION. — Of existing Gunthorpe Toll bridge, for Notts C.C. J. Cracroft Haller, C.S. Dep. £2.

✱OCT. 8. — **Rochford.** — HOUSES. — Erection of 24 non-parlour type houses in the parish of Eastwood, and 20 non-parlour type in the parish of Thundersley, for the Rochford Rural District Council. A. C. Madge, Surveyor to the Council, at his office, Rayleigh, Essex. Dep. £1 1s. for each scheme.

OCT. 8.—**Spilsby.**—ADDITIONS. To Council Offices, Boston-rd., for R.D.C. J. E. Bolt, S.

OCT. 8.—**Westwell.** — PAINTING. — 72 lengths of 9 ft. iron fence and five gates with two coats black varnish at Westwell Cemetery, for P.C. J. Hopkins, C.

OCT. 10. — **Bristol.** — ELECTRIC LIGHTING. — Of two three-floor transit sheds and of two large silo granaries, at Royal Edward Dock, Avonmouth, for Port Authority. T. A. Peace, Chief Engineer.

OCT. 10. — **Dublin.** — ELECTRIC LIGHTING. — At Pro-Cathedral, Marlborough-st. J. P. Tierney & Co., consulting engineers, 44, Kildare-st.

OCT. 10. — **Erith.** — BRICK AND CONCRETE WORK.—Construction in brickwork and concrete of foundation piers for overhead sludge tanks at the L.C.C.'s Southern Outfall works at Crossness, in the Urban District of Erith. Chief Engineer of the Council, Old County Hall, Spring-gardens, S.W.1. Dep. £2, by cheque or draft to the order of the L.C.C.

OCT. 10.— **Cavan.** — ELECTRIC WIRING.—In Courthouse, for C.C. P. O'Reilly, secretary.

OCT. 10.—**Maidstone.**—NEW SCHOOL BUILDINGS.—Erection of, at Maidstone (Kent) for the Maidstone Grammar School for Boys, for the Kent Education Committee. County Education Architect (Mr. W. H. Robinson, F.R.I.B.A.), Room 69, Sessions House, Maidstone. Dep. £2 2s., payable to the Kent Education Committee and crossed "National Provincial Bank, Ltd."

OCT. 11. — **Belfast.** — PAINTING. — At the infectious diseases hospital, Purdysburn, for C.B. S.

OCT. 11. — **Bootle.** — HOUSES. — 102 in Sefton-rd., Monfa-rd., Menai-rd., and Fernhill-rd., for C.B. B.E. and S. Dep. £2 2s.

OCT. 11. — **Camblesforth.** — ADDITIONS. — Also alterations at Camblesforth Council school, for West Riding E.C. Education Department, County Hall, Wakefield.

OCT. 11. — **Croydon.** — DOMESTIC BUILDINGS AND FLATS. — Erection and completion of two blocks of domestic buildings, each containing 12 self-contained flats, upon a site situate at the rear of late Nos. 14 to 26, Upper Coombe-st., for the County Borough Council of Croydon. Borough Engineer, Town Hall, Croydon. Dep. £3 3s.

OCTOBER 11.—**Dundee.**—HEATING.—Installation at new secondary school, Perth-rd., for E.C. Thomas & Wilkie, F.R.I.B.A., 21, South Tay-st.

✱OCT. 11. — **London.** — INTERNAL PAINTING and CLEANING WORK at Adastral House, Kingsway, for the Commissioners of His Majesty's Office of Works, Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

OCT. 11.—**Teddington.**—PAINTING. — External and internal at National Physical Laboratory, Teddington, for the Commissioners of His Majesty's Office of Works. Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

OCT. 11. — **West Riding.** — INSTALLATION. — Of, and providing and fixing a low pressure hot water at: (1) Havercroft-w.-Cold Hiendley New school; (2) Hemsworth Four Lane Ends New school, for E.C. Education Department, County Hall, Wakefield.

OCT. 12. — **Crewe.** — EXTENSIONS. — Certain extensions at the Brierley-st. schools, consisting of the erection of two new class rooms, etc., for the Borough of Crewe Education Committee. E. G. Timbrell, F.I.A.A., etc., Borough Architect, Municipal-buildings, Crewe.

OCT. 13. — **Stockport.** — CONVENIENCE. — In Fair ground, Great Portwood-st., for C.B. H. Hamer, B.S.

OCT. 13. — **Whiston.** — ADDITIONS. — Also alterations to Council offices and depot, Delph-lane, for R.D.C. W. Ellis, architect, 9, Hardshaw-st., St. Helens. Dep. £1 1s.

OCT. 14. — **Farnham.** — FENCING. — Provision and erection of boundary and garden fences and gates upon East-st., Hale, and Badshot Lea housing sites, for U.D.C. R. M. Sargent, Building Inspector.

✱OCT. 14.—**Kenilworth.**—ALTERATIONS and EXTENSION to Kenilworth Post Office, for the Commissioners of His Majesty's Office of Works. Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

✱OCT. 14.—**London.**—Cleaning marble and stone surfaces, etc., at Victoria and Albert Museum, for the Commissioners of His Majesty's Office of Works, Contracts Branch, King Charles-st., London, S.W. Dep. £1 1. (Cheques payable to the Commissioners.)

OCT. 14. — **Wick.** — POLICE STATION. — At Wick, near Bristol, for Gloucestershire C.C. E. S. Sinnott, C.S. Dep. £2 2s.

OCT. 15. — **Richmond (Surrey).** — PROMENADE. — Terrace promenade at Cardigan House estate, Richmond-hill, for T.C. B.E. and S. Dep. £1 1s.

OCT. 15. — **St. Albans.** — COTTAGES. — 35 cottages at Old London-rd., Cotton Mill-lane site for T.C. F. T. Negus. City .E and S. Dep. £1 1s.

✱OCT. 17. — **Clacton.** — TOWN HALL. — Erection of new Town Hall at Clacton-on-Sea, for the U.D.C. Council Offices, Clacton-on-Sea. Dep. £2 2s.

OCT. 17. — **East Wessex.** — REPAIRS AND MATERIALS. —At Bovington with Lulworth, Hilsea and Portsdown Hill, Gosport, Netley and Southampton, Parkhurst, Isle of Wight, Christchurch, Hants, for War Dept. Major R. Hamilton, R.E., for Commanding Royal Engineer, Wessex Area (East). Royal Engineer Office, Milldam Barracks, Portsmouth.

✱OCT. 17.—**King's Langley.**—TELEPHONE EXCHANGE.—Erection of, for the Commissioners of His Majesty's Office of Works, Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

OCT. 17. — **Nottingham.** — EXTENSION. — Of Nurses' Home at Bagthorpe Infirmary, Hucknall-rd., for T.C. Starr & Hall, architects, 12, Victoria-st. Dep. £5.

✱OCT. 17.—**London.**—FLATS.—Erection of 9 blocks of buildings at Manor-rd, Canning Town, comprising 196 self-contained flats, in sections, for the County Borough of West Ham. Office of the Borough Engineer, Town Hall, West Ham, E.15. Dep. £2.

✱OCT. 17.—**Cirencester.**—ALTERATIONS and ADDITIONS to the Cirencester Post Office, for the Commissioners of His Majesty's Office of Works, Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

OCT. 18. — **London.** — TELEPHONE EXCHANGE. — Erection of, at Shepherd's Bush, for the Commissioners of His Majesty's Office of Works, Contracts Branch, King Charles-st., London, S.W.1. Dep. £1 1s. (Cheques payable to the Commissioners.)

✱OCT. 18. — **London.** — DEMOLITION WORK. —Demolition of the premises, Nos. 587-591, Fulham-rd., Walham Green, and for the erection on the site of new showrooms and offices for the Electricity Dept., for the Fulham Borough Council. H. M. de Colleville, 48, Bedford-row, W.C.1. Dep. £2, with the Borough Treasurer.

OCT. 21. — **Jarrow-on-Tyne.** — POLICE STATION. — Also Court buildings, for Durham C.C. C.S., 48, Old Elvet, Durham.

OCT. 21.— **Woking.** — ALTERATIONS. — Also additions to pavilion at Constitution Hill Recreation ground, for U.D.C. G. J. Wooldridge, S.

OCT. 25. — Salisbury Plain. — WORKS AND REPAIRS.—(War Department Contract), Term Contract, from January 1, for the undermentioned stations in the Engineer District. Contract No 1, Bulford Camp. Contract No. 2, Tidworth and Perham Down. Commanding Royal Engineer, Salisbury Plain East District, Royal Engineer Office, Haig-rd., Bulford Camp, Salisbury Plain.

OCT. 28.—**Essex.**—SANATORIUM BUILDINGS.—Erection of various buildings, roads, sewers, heating plant, etc., at Black Notley, for the Public Health and Housing Committee of the Essex County Council. Jno. Stuart, F.R.I.B.A., County Architect, Springfield Old Court, Chelmsford. Dep. £5 5s. to F. H. Owers, F.S.A.A., County Accountant, Duke-str., Chelmsford

✱NOV. 1.—**Oldbury.**—SCHOOLS.—Erection of the first portion of new elementary schools at Bristnallhall-la., Oldbury, and for laying out the playgrounds, and other work in connection with same for the Oldbury Education Committee. Arthur Culwick, Clerk to the Council, Council Offices, Oldbury. Dep. £2 2s.

NOV. 1.—**Salisbury Plain.**—REPAIRS AND MATERIALS.—Tenders are required by the War Department for a term contract from January 1, 1928, for the following areas, situate in the Southern Command, Salisbury Plain West, Royal Engineer district, Larkhill camp, Netheravon; and buildings and property situated outside the 2 mile radius. Commanding Royal Engineer, R.E. Office, Larkhill, Wilts.

—**Chapel-en-le-Frith.** — ALTERATIONS. — To Church of England School, Manchester-rd. C. Flint, L.R.I.B.A., architect and surveyor, Quadrant, Buxton.

—**Haverfordwest.**— FLOORS. — Reinforced concrete floors and sundry work at Roch Castle. D. F. Ingleton, L.R.I.B.A., A. and S., 11, Victoria-place.

—**Ulverston.**—ALTERATIONS.—To lodge and administrative block at High Carley Fever Hospital, for Ulverston Joint Hospital Board. Settle and Brundrit, A.R.I.B.A., architects, County-sq.

MATERIALS, ETC.

OCT. 3. — **Hebburn.** — HIGHWAY MATERIALS, ETC.— For U.D.C. H. Paterson, S.

OCT. 3.—**Burnham-on-Sea.**—HIGHWAY MATERIAL. —For U.D.C. Wm. H. Chowins, S.

OCT. 5. — **Rothwell.** — WATERMAINS. — 464 yds. of 4-in. concrete or bituminous lined C.I. of spun S. and S. pipes, and 500 to 600 yds. of 3-in. C.I. watermains S. and S. pipes, cast vertical, along with faced and ordinary specials, for U.D.C. E. F. Moorhouse, C.

OCT. 8.—**Edinburgh.**—MATERIALS.—Highway and builder's materials, etc., for T.C. A. Grierson, T.C.

OCT. 10. — **Weymouth and Melcombe Regis.** — BUILDERS' MATERIALS, ETC.—For T.C. B.S.

OCT. 17. — **Hertford.** — HIGHWAY MATERIALS. — For T.C. B.E. and S.

ENGINEERING, IRON AND STEEL.

OCT. 3. — **Ipswich.** — EXTENSION. — To Cliff Quay in the Port of Ipswich in reinforced concrete piling and framework, together with railway and crane tracks, roads and relative works, for Harbour Commission. Sir Alexander Gibb & Partners, Queen Anne's Lodge, S.W.1. Dep. £5 5s.

OCT. 3.—**Downes.**—WIDENING.—Of bridge, near Crediton, for Devon C.C. F. E. Simpson, C.S., 21, West Southernhay, Exeter. Dep. £1 1s.

OCT. 4. —**Bray.** — ELECTRIC WIRING. — For (1) construction of a concrete road, paths, kerbs and sewer; (2) erection of necessary poles and cables and wiring of 68 houses, for U.D.C. E. M. Murphy, 27, Molesworth-st., Dublin. Dep. £1 1s.

OCT. 5.—**Clevedon.**—LAKE.—Stone-faced, concrete seawall, approximately 900 ft. long and incidental works, at Salt House Bay, for U.D.C. Gower Pimm, engineer, 72, Queen-sq., Bristol. Dep. £2 2s.

OCT. 7. — **London.** — GIRDER. — For bridges for Bombay, Baroda and Central India Railway Co. S. G. S. Young, secretary, 91, Petty France, S.W.1. Charge £1.

OCT. 8. — **Lowdham.** — EXTENSION. — Extension of two small bridges, both situate close to Lowdham Railway Station, for Notts C.C. J. Cracroft Haller, C.S. Dep. £2.

OCT. 10. — **Erith.** — TANKS. — Two cast-iron sewage sludge tanks and steel girders supporting same, at Southern Outfall Works at Crossness, for London C.C. Chief Engineer of the Council, at the Old County Hall, Spring-gdns., S.W.1. Dep. £5.

OCT. 10.—**Glasgow.**—BRIDGE.—Carrying Fulton-st., Anniesland, over L. & N.E.R., for T.C. D. Stenhouse, T.C.

OCT. 10.—**Rothwell.**—SEWAGE.—Three settling tanks and eight Bacteria beds, together with humus tanks, sludge lagoons, three pumping stations, and about 3,000 yds. of 18in., 12in., and 4in. cast-iron pumping mains, also two cottages, and other incidental works, for U.D.C. Willcox & Raikes, engineers, 63, Temple-row, Birmingham. Dep. £5 5s.

OCT. 10. — **Stewartry of Kirkcudbright.** — BRIDGES. —Construction, in concrete with steel girders, of bridge over the Deugh Water at Bridgend, and another over the Poimaddy Burn, and the removal of the existing bridges, for Northern D.C. of C.C. Blyth & Blyth, civil engineers, 135, George-st., Edinburgh. Dep. £3 3s.

OCT. 11. — **Atherstone.** — WIDENING. — In reinforced concrete of Coleshill-rd., Canal-bridge and other work, for Warwickshire C.C. D. H. Brown, C.S., 8, Northgate-st. Dep. £2.

OCT. 12. — **Stirling.** — TANK. — Supplying and laying about 500 lin. yds., of 3-in. diameter cast-iron pipes, constructing a concrete tank, and executing relative works in Balmore and Torrance Special Water district, for Western D.C. of C.C. Crouch & Hogg, C.E., 17, Lynedoch-st., Glasgow, C.3. Dep. £1 1s.

OCT. 13. — **Johannesburg.** — BRIDGE. — Structural bridge work, for Worcester Fore Bay Line. Department of Overseas Trade, 35, Old Queen-st., S.W.1.

OCT. 13.—**St. Columb Major.**—SEWERAGE.—Laying about 730 yards of 8in. sewer and 40 yds., of 6in. sewer, and constructing sewage outfall works at Trencreek Village, for R.D.C. A. G. Oxland, S., Queens, Fraddon. Dep. £2 2s.

OCT. 14. — **Weymouth and Melcombe Regis.** — BRIDGE.—Steelwork for a two-leaf bascule bridge, for T.C. H. W. FitzSimons, 39, Victoria-st., S.W.1. Dep. £3 3s.

OCT. 15. — **Glasgow.** — BUNKER. — Ferro-concrete coke bunker, at Dawsholm Gas Works, for T.C. D. Stenhouse, T.C. Dep. £5.

OCTOBER 15.—Siam.—BRIDGES.—Superstructures for steel railway bridges, for Royal State Railways. Sandberg, 40, Grosvenor-gdns., S.W.1.

OCT. 17.—**Waterford.**—WHARF.—Of a deep-water wharf or jetty in River Suir, for Harbour Commissioners. Austin A. Farrell, Secretary. Dep. £5 5s.

OCT. 19. — **Dublin.** — STEELWORK. — 460 tons of steelwork required for renewal and repairs of bridges, for Gt. Southern Rly. J. F. Sides, Chief E., Broadstone Station, Dublin. Dep. £2 2s.

ROAD, SEWERAGE, AND WATER WORKS.

OCT. 3. — **Beeston.** — SEWER. — Laying about 700 yds., of 12-in. pipes, including excavation, manholes, etc., for U.D.C. E. A. Bush, S. Dep. £3 3s.

OCT. 3. — **Bridlington.** — SEWERS. — Laying of sewers and construction of reinforced concrete roads, on Sands Cottage estate, for Gant & Mudford. F. Vaux, F.R.I.B.A., Danes Moor-chambers, Quay-rd.

OCT. 3. — **Hendon.** — IMPROVEMENTS. — Kerbing channelling, road widening and surface water drainage and other works in connection with Bittacy Hill and Mill Hill-rd., scheme, for U.D.C. A. O. Knight, E. and S. Dep. £10.

OCT. 3.—**Mansfield.**—SEWER.—Works in connection with laying of 9in. stoneware pipe sewer and manholes in Big Barn-la., for Corporation. W. Thompson, B.E. and S.

OCT. 3. — **Portslade-by-Sea.** — RECONSTRUCTION. — Of carriageway, North-st., by means of reinforced concrete, approximate area 3,350 yds. super, for U.D.C. D. V. Howard, surveyor, 17, Station-rd.

OCT. 3. — **Teddington.** — MAKING-UP. — Of Fairfax-rd., for U.D.C. E. Bostock, S. Dep. £2 2s.

OCT. 3.—**Tilbury.**—ROAD.—Reconstruction in reinforced concrete of Chadwell-rd., carriageway from London-Tilbury arterial road to Cross Keys public house, the provision and laying of artificial stone slab paving together with necessary kerbing and surface water sewers, etc., for U.D.C. S. A. Hill-Willis, E. and S. Dep. £3 3s.

OCT. 4. — **Kirkcaldy.** — SEWERAGE. — Street and sewerage works, at Woodend site, Cardenden, for D.C. W. Williamson, F.R.I.B.A., architect. Dep. £1 1s.

OCT. 4.—**Salford.**—PAVING.—Also completing two streets with tar macadam and one passage with stone setts, for T.C. City E.

OCT. 4. — **St. Neots.** — ROADS. — Also footpaths, etc., on housing site, for U.D.C. R. I. Weymouth, E. and S. Dep. £2 2s.

OCT. 4. — **Swansea.** — MAKING-UP. — Millwood-st., from Monterey-st., to Clare-st.; Walters-st., from Cecil-st. to Manor-rd.; Back-st., at rear of Sketty-rd., (north side) and Le Breos-av., (east side), for C.B. J. R. Heath, B.E. and S.

OCT. 4.—**Thornaby-on-Tees.**—RECONSTRUCTION.— For (a) reconstruction of 6in. and 9in. sewers, approximate length 1,100ft.; (b) conversion of pan closets and privy ashpits, number 180; (c) reconstruction and enlargement of manholes, etc., flushing shafts, etc., number 23, for T.C. G. H. Connor, B.E. and S. Dep. £2 2s.

OCT. 4.—**Upper Stour Valley.**—SEWERS.—560 yds. of 30-in. and 2,300 yds., of 27-in. reinforced concrete, pipe storm water sewers, with manholes thereon; also 770 yds., of 9-in. cast-iron pipe pumping main, and other incidental works, for Main Sewerage Board. Geo. Plant Deeley, engineer, 13, Church-st., Stourbridge. Dep. £3 3s.

OCT. 5.—**Acton.**—REPAIRS.—For (a) making-up Highfield and Northfields-rd., in tarmacadam; and (b) laying a 15-in. diameter stoneware sewer in Acton-lane, N.W.10, for T.C. B.E. Dep. £3 3s.

OCT. 5.—**Hove.**—MAKING-UP.—Colbourne-rd., and Pembroke-gdns., for T.C. B.S.

OCT. 5. — **Leeds.** — PAVING. — Kerbing, flagging and paving channels, etc., in Regent-st.; kerbing, tar paving footpaths, paving channels and macadamising carriageways, etc., in a number of streets on Wither House housing estate; Kerb, tar paving and flagging footpaths, tar macadamising and paving carriageways in Moor Park-av., Council-st., Harrowby-rd., (part), Kepstorn-rd., (part), Sunnydene, back Sunnydene; Wakefield-av., for T.C. E. W. Cockerlyne, Highways E.

OCT. 5. — **Skipton.** — SEWERS. — Two percolating filters, humus, tank, etc., at Grassington, for R.D.C. A. Rodwell, E. and S. Dep. £2.

OCT. 6.—**Bucks.**—CONSTRUCTION.—Carrying out certain accommodation works on Slough-Colnbrook main-rd., for C.C. E. Winfield, C.S., Lloyds Bank-chambers, Aylesbury. Dep. £10.

OCT. 6. — **Bucks.** — DRAINAGE. — Fencing and surface water drainage works between Loughton Cross-roads and Loughton Village, for C.C. E. Winfield. C.S., Lloyds Bank-chambers, Aylesbury.

OCT. 6.—**Bucks.**—MAKING UP.—Existing road surface and surfacing in asphalt the section of road approximately 3½ miles in length on London-Oxford main-rd., at High Wycombe, for C.C. E. Winfield, C.S., Lloyds Bank-chambers, Aylesbury. Dep. £10.

OCT. 6.— **Rugby.** — CEMETERY. — Cemetery, comprising:—85 yds. lin. 6in. sewer and excavation, 340 yds. lin. 4in. and 6in. land drains, 2,000 yds., sup. tarmacadam road, 1,650 yds., sup. 16ft. gravel roads and 1,900 yds. sup. 6ft. gravel paths, including the necessary levelling and earthworks, two small conveniences, cleaning-out and widening of a stream and the construction of cascades and steps and erection of entrance gates and pillars and iron boundary fences, for U.D.C. J. H. Sharps E. and S. Dep. £1 1s.

OCT. 6.—**Southend-on-Sea.**—MAKING-UP.—Of Burges rd., sec. 1; Burges-ter.; Thorpe Bay-gardens, sec. 1; Dawlish-drive, sec. 2; and Ilfracombe-rd., sec. 2, and incidental works in connection thereto, for C.B. R. H. Dyer, B. E. and S. Dep. £1 1s. each.

OCT. 7. — **Ruislip-Northwood.** — MAKING-UP. — Of Manor-way, for U.D.C. H. R. Metcalfe, E. and S. Dep. £1.

OCT. 8. — **Red Hill.** —WIDENING.—Of Nottingham-Mansfield main road, involving excavation of approximately 12,000 cub. yds., of embankments, for Nottingham C.C. J. Cracroft Haller, C.S. Dep. £2.

OCT. 8.—**Skegness.**—SEWERS.—In Burgh-rd., district, for U.D.C. R. H. Jenkins, E. and S. Dep. £2.

OCT. 10. — **Hayes.** — MAKING-UP. —Of Mount-rd., for U.D.C. R. S. Davey, E. and S. Dep. £2.

OCT. 10.—**London.**—PAVING.—Bodlam-rd., Braeside-rd., Bridgewood-rd., Drakewood-rd., Grayscroft-rd., Hawkhurst-rd., Helmsdale-rd., Nettlewood-rd., and, Kirkstall-gardens, Streatham; and Leacroft-av., Balham, for Wandsworth B.C. E. J. Elford, B.E., 215, Balham High-rd., S.W.17.

OCT. 10.—**Whitehaven.**—MAINS.—Provision of pipes, fittings, etc., and laying of 3,730 yds., of 5in. concrete lined cast-iron water main from the Intake Works on Cold Fell to Winscales Reservoir, for R.D.C. W. J. Goode, engineer. Dep. £2 2s.

OCT. 10.—**Wood Green.**—IMPROVEMENTS.—To Berwick-rd., and Leith-rd., for U.D.C. C. H. Croxford, E. and S. Dep. £1 1s.

OCT. 24. — **Middlesex.** — MAINS. — Laying and jointing of approximately 5,344 lin. yds. of 48-in. diameter, 987 lin. yds., of 42-in. diameter, and 390 lin. yds. of 12-in. diameter cast-iron, and approximately 127 lin. yds. of 52-in. diameter steel water main, together with connections and all contingent works, from St. Michael's-rd., Willesden, to the Board's Reservoir at Fortis Green, for M.W.B. Chief Engineer's Department (Room 201), Offices of the Board, 173, Rosebery-av., E.C.1. Dep. £10.

Competitions.

(*See Competition News p.* 494.)

Auction Sales, Tenders, etc.

OCT. 3 and 4.—**Loughton.**—Protheroe & Morris will sell by order of Mr. H. Fairhead, at the Forest Nurseries, Loughton, well-grown nursery stock, fruit trees, flowering trees, roses, etc. Auctioneers, 67 and 68, Cheapside, London, E.C.2.

OCT. 11.—**Near Evesham.**—Perry & Phillips, Ltd., in conjunction with Norbury Smith & Co., will sell (unless previously sold privately) at Rous Lench Court, near Evesham, a Tudor manor house (part dating from 1480 A.D.), full of oak, the whole of the interior and exterior fixtures and fittings, after the sale of the fixtures and fittings the fabric of the mansion will be sold for demolition. Auctioneers, 59, High-st., Bridgnorth, Shropshire.

OCT. 11.—**Surrey.**—Hampton & Sons will sell by order of executors at St. James's estate rooms, 20. St. James's-sq., S.W.1 (unless previously sold) in two lots freehold residence and grounds known as "Lime Lodge." Auctioneers, 20, St. James's-sq., S.W.1.

OCT. 12. — **Sutton.**— Dixon & Co., will sell at the Sutton Public Hall, Sutton, freehold building land on the Highfields estate in Upland-rd., Sutton, also submit various plots in Carshalton, Banstead, Cheam and District. Auctioneers, Railway Approach, Sutton, Surrey.

OCT. 19.—**London.**—Leopold Farmer & Sons in conjunction with Allsop & Co. will sell by order of executrix, in one or more lots, at the London Auction Mart, 155, Queen Victoria-st., E.C.4. Freehold property in Porchester-rd. and Queens-rd., Bayswater W.2., about ¼ of an acre with vacant possession. Auctioneers, L. F. & Sons, 46, Gresham-st., E.C.2. A. & Co., 15, Soho-sq., W.1.

Public Appointments.

OCT. 5.—**Durham.**—Assistant Architect required by the County of Durham Education Dept. County Education Architect, 34, Old Elvet, Durham.

✱OCT. 10. — **Durham.** — (1) CLERK OF WORKS, (2) Assistant Clerk of Works required by the Durham County Council. Director of Education, Shire Hall, Durham.

✱OCT. 12.—**Bognor.**—Clerk of Works to supervise the construction of 30 houses required by the Bognor U.D.C. J. Draper, A.M.Inst.C.E., engineer and surveyor, Council Offices, Bognor, endorsed "Clerk of Works."

✱OCT. 12. — **Exeter.** — GENERAL ASSISTANT required with experience in measuring for repairs, dilapidations and painting, levelling and surveying. John Bennett, City Architect, Exeter.

✱OCT. 12.—**Wigan.** — ARCHITECTURAL ASSISTANT required in the Borough Engineer's Department with experience in design and erection of schools, public baths, houses, etc. R. B. Donald, M.Inst.C.E., Borough Engineer, Wigan.

✱OCT. 18. — **India.** — ARCHITECT required on the North Western State Railway in India on an agreement for three years by the High Commissioner for India. Secretary to the High Commissioner for India, 42, Grosvenor-gdns., London, S.W.1.

PROPOSED NEW BUILDINGS & OTHER WORKS*

In these lists care is taken to ensure the accuracy of the information given but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced Abbreviations: T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; B C. for Borough Council; P.C. for Parish Council; M.H. for Ministry of Health; M.T. for Ministry of Transport; C.B. for County-Borough; B.E. for Board of Education; M.A.B. for Metropolitan Asylums Board; and M.W.B. for Metropolitan Water Board.

FOLLOWING is a list of abbreviations:— Borough Surveyor, B.S.; Borough Engineer, B.E.; District Surveyor, D.S.; Clerk, C.; Town Clerk, T.C.; County Engineer, C.E.; County Surveyor, C.S; County Architect, C.A.; Surveyor, S.; Engineer, E.; Borough Architect, B.A.; Architect, A.

AMPTHILL.—M H. given provisional sanction to R.D.C. for building forty houses in the district.

ANTRIM.—C.C. applied for sanction to borrow £2,500 for carrying out a hot water supply installation at County Asylum.

BANGOR.—U.D.C. are to seek sanction to following loans:—reconstruction to certain streets in reinforced concrete, £18,000; purchase of gold pavilion at Carnalea and extending course, £4,400; public lavatory at Ballyholme, £1,000.

BARKING TOWN.—U.D.C. are proposing to erect lavatory accommodation at Vicarage Field at £507.—Council recommend the approval to scheme No. 1 for construction of sewage works on Ripple Marshes for treatment of sewage of Barking and Ilford and construction of sewers in Barking, at a cost of £275,244, of which Barking's proportion is estimated at £143,220, and application be made to M.H. for approval thereto. —Plans and estimates are to be prepared for erection of convenience at Abbey Playing Field, and tenders are to be invited.—Sanction has been received to borrowing £1,622 for erection of Axe-st., sub-station. —Application is to be made to M.H. for sanction to loan of £26,800 in connection with proposal for the widening of Jenkins-la.—Plans passed: Four houses, Tanner-st., for J. Bauckham: 16 houses and four garages, Lyndhurst-gardens, for H. Samborough.

BEXHILL.—T.C. approved plans:—3 bungalows, Cooden-drive, J. E. Maynard for H. P. Farnfield; pair of semi-detached houses, Mill View, J. E. Maynard for H. P. Farnfield; 6 detached houses, Little Common rd., J. E. Maynard, for W. P. Glessing.

BLAYDON.—Council approved plans for Alnwick Construction and Engineering Co., Ltd., for steel-framed buildings proposed to be erected on behalf of the Northern Bedding Company, Newcastle.

BRADFORD.—Sites and Works, Sub-committee of the E.C. are to obtain a site for a new school at Chellow Grange, Allerton.—Corporation also approved erection of new block of buildings, for accommodation of boys attending the Macmillan School for Defectives at Thackley.

BRIDGE.—R.D.C. passed plans:—Four bungalows for E. A. Smith, Barham; bungalow for Mr. Hayward.

BRIGHTON.—In connection with lay-out of Mouse-coomb-pk., T.C. sanction £2,000 for pavilions.—T.C. received letter from East Sussex C.C., forwarding copy of an estimate of further works in connection with the Rottingdean Road Sea Defences amounting to £966.—Council recommend scheme for provision of tidal bathing pool opposite the Chain Pier steps.—W. H. Overton has forwarded sketch plans for altering and adapting existing buildings and erecting new buildings on open portion of North Road works site at an estimated cost of £3[illegible],000, and T.C. resolved that scheme be approved and tenders invited.—Chichester Diocesan Fund and Board of Finance has informed T.C. that committee has accepted Corporation's offer to sell to the Board a site for mission hall on the North Mouse-coomb estate.—Griffiths, Sons & Cromwell, Ltd., are willing to erect the 184 houses for the reduced sum of £96,63[illegible], and M.H. sanction borrowing of sum.

BURNLEY.—M.H. provisionally approved proposals of T.C. to erect laundry, garage, porter's lodge at Bank Hall Maternity Hospital. Plans by A. Race, B.E. and S., and tenders are to be invited.

CARLISLE.—T.C. has received M.H. sanction to borrow £1,500 for fencing of two playing fields.—New contracts let by Council involve 334 houses. Messrs. Laing are erecting 2[illegible] at Blackhall, 12[illegible] at the Raffles, and 14 at Botcherby; J. & R. Bell are to build 64 at the Raffles and 4[illegible] at Botcherby, making 104, all two-bedroom houses, and the Border Engineering Co., are to erect 76 houses at Botcherby.

CHESTER.—T.C. recommend that the fence rails on Canal bridge at Northgate be renewed at £300.—Chief Constable is to confer with City S., and carry out alterations to give effect to suggestions of His Majesty's Inspector that an office in the cell corridor at the prison be provided for use of Matron.—City S., has prepared lay-out plans for erection of business premises on Handbridge site, and T.C. resolved that City S., be instructed to invite tenders for the demolition of existing buildings upon site.—Electrical Engineer to have roof of power house at Queen's Ferry repaired at an estimated cost £15[illegible].—City S., received M.H. approval for erection of 26 houses upon Hoole-lane estate.—City S., is to invite tenders for 152 houses upon land on Eaton-rd., estate.—M.H. approved borrowing of £18,538 and £3,150 for works of sewerage in Handsbridge district.—Plans passed:—8 houses, St. Mark's-rd., and Bray-rd., for Henry Vernon & Sons; 10 houses, King's-cres., off Stock's-la., for G. Austin.

COVENTRY.—T.C. recommend that approval be given to proposal for sale of two sites for licensed houses at Radford Housing Estate.—Approval been given to erection of additional 26 houses at Radford Housing estate at £1[illegible],92[illegible].—Proposal for a reciprocal sale and purchase of land at Gulson-rd., re-housing site been approved.—Scheme for public conveniences at Foleshill, at £1,58[illegible], also been approved.—T.C. approved certain alterations to counters, etc., at Central Collection Office, at £465.—E.C. recommend that certain further land near Edgewick Council school be acquired at £2[illegible].

CROYDON.—C.B. received M.H. approval to borrowing following loans:—£31,000 purchase of Mitcham-rd., housing site; £18,250 erection of nurses' home, Croydon Mental Hospital; £14,375 erection of Council school, Woodside; £8,740 erection of Council school, Cooper-rd., Waddon; £6,965 erection of four shops and flats, South End; £3,200 Norwood-grove—purchase and adaptation of mansion.—Application is to be made for £68,675 for sewer extension work.—In connection with ladies' slipper baths and laundry at Croydon Baths, the B.E., is to prepare plans and obtain tenders for alterations to baths at £3,500.—T.C. received formal sanction of M.H. to borrowing £31,000 for the purchase of land at Mitcham-rd.—Plans passed: Scratchley Bros., 2 lock-up shops, Grange rd.; — Smith, 1 garages, workshop and w.c.'s, St. Saviour's-rd.; O. Rayson, 6 garages, Penrith and Cranbrook-rds.; London and Suburban Land and Building Co., 4 houses, Malden-av.; R. B. Manser, 2 houses, Tavistock-grove; W. S. Evans, hall and clubroom, 2, Pump-pail; S. Jefferies, 17 houses and garages, Ross-rd.; T. Barden, 1 garages, Enmore-rd. and Eunmore-av.; C. H. Elliott, 6 garages, Grecian-crescent; F. Windsor, 6 garages, Lansdowne-rd.; J. Midmer, 4 houses, Norbury-cross; C. Lewin, 10 houses and 9 garages, Epsom and Duppas-rds.

DAGENHAM.—Three more elementary schools are to be built by Essex E.C.

DERBY.—B.E. are to be asked by T.C. to authorise immediate provision of an additional elementary school to accommodate 350 children in Allenton.

EDMONTON.—Housing Committee of U.D.C. recommend application to M.H. for approval for subsidy purposes of the proposal to erect 106 "A" type and 42 "B" type houses.

EPSOM.—U.D.C. passed plans:—Pair of houses, Albert-rd., for Watters; two pairs of houses in Copse Edge-av., for H. H. & F. Roll; pair of houses, West hill, for A. & F. J. Leather; two pairs of houses in Manor Green-rd., East, for E. Uden & Co.; two h uses in The Chase, for W. Taylor.—R.D.C. approved plan for police house at Guildford-rd., for the Surrey Standing Joint Committee. M.H. approved tender by H. H. & F. Roll for 26 cottages for £11,924 and the construction of street works for £292.

ESHER.—U.D.C. are to invite tenders for central fire station adjoining Council office s.

ETON.—R.D.C. passed plans:—Langley house in Slough-rd., for Mansell & Stevens, and 150 houses in New-rd., and Meadfield-rd., for Perry Bros.

GEO. M. HAMMER & CO. LTD.

CROWN WORKS, BERMONDSEY. ST. JAMES'S RD., LONDON, S.E.16.

MANUFACTURERS OF

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CHURCH, SCHOOL, LIBRARY, OFFICE, LABORATORY & HOSPITAL

ETC., ALSO

EVERY DESCRIPTION OF

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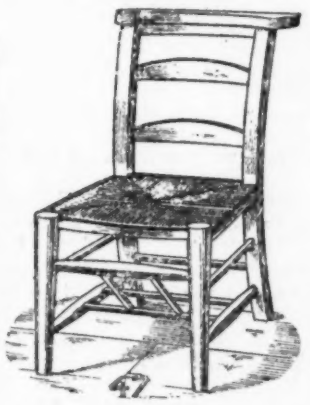
MEMORIALS



PARTITIONS

FLEETWOOD.—Mr. W. Melville, engineer and surveyor, to Council, preparing plans for road from Poulton-rd., to Rossall-la., which will cost £52,880.

GATESHEAD.—Gateshead Nursing Association acquired site upon which it is proposed to erect maternity home at £8,000.

HAYNES PARK.—Beds C.C. are considering purchase of Haynes Park as an institution for mental defectives.

HESTON AND ISLEWORTH.—U.D.C. passed plans: P. H. Watkins, 4 houses, Great West-rd.; Perry's (Ealing, Ltd., 40 houses, The Crossways; G. Snell, 4 garages, St. Stephen's-rd.; Parkwood Development Co., 8 houses, Parkwood-rd.; Perry's (Ealing) Ltd., 6 houses, The Crossways; G. Harper, factory off St. John's-rd.; W. J. Harris, 60 houses, Spring-grove estate; Building Enterprises Ltd., 34 houses, Spring Grove-cres.; Brewer, Smith & Brewer, 4 houses, Kilmorey-gdns.; H. J. Ladley, 10 houses, Woodlands-rd.; F. Ferris, 4 houses, Jersey-rd.; P. Chase Gardener & Co., 2 houses, Alexandra Gardens estate; C. E. Langer & Co., 22 houses and 44 garages, Beaversfield estate; J. G. Ambrose, 8 houses, Wood-lane.—U.D.C. are to provide accommodation for 900 additional pupils in the local schools.

IPSWICH.—Estate Committee of T.C. reported that addition to gift of a portion of Stoke Park, to be known as Bourne Park, Ald. W. F. Paul had intimated that upon the park being formally handed over to the town, he would send a cheque for £4,000 to be expended upon iron fencing round the park, main entrance gates, double and single, park keeper's lodge, sanitary conveniences, swings, and other amusements for children, shelter, etc.

LEATHERHEAD.—U.D.C. are proposing to erect another 25 houses.

LEEDS.—Notices are being served by Corporation upon owners of strip of warehouse property near Parish Church, preliminary to its demolition and the driving of a new street through it, linking up with The Calls.

LONDON (BATTERSEA).—B.C. received M.H. sanction to erection in York-rd., of 8th, 9th and 10th blocks of tenements in connection with the Plough-rd. Improvement scheme.

LONDON (DEPTFORD).—B.C. received M.H. formal sanction to borrowing £1,912 for erection of Deptford Health Centre. Plans passed: J. Crewdson, 70, Victoria-st., S.W.1, to build and drain new lecture room at South Eastern Hospital, Avonley-rd.

LONDON (FINSBURY).—An additional maternity centre is being provided by B.C. in Leage-st.

LONDON (LEWISHAM).—B.C. passed plans:—J. H. Pearson, garages, Upper Colfe-rd., and Codrington-hill; W. H. Gaze & Sons, Ltd., school, Brockley-rise.

LONDON (STEPNEY).—M.H. received B.C. sanction to borrow £3,170 for provision of a public laundry adjacent to the Ratcliffe baths.—Plans passed W. Clarkson & Partners, erection of a building at 2, Gill-st.

LOWESTOFT.—T.C. instructed B.S. to arrange for outside painting of Isolation Hospital.—Estimate of B.S., to renovate the iron pavilion at Isolation Hospital for accommodation of servants at £2[illegible], been approved. —Plans passed:—Warnes & Son, 5 houses, Rotterdam-rd.; Metropolitan Asylums Board, alterations, St. Luke's Hospital.

MALDON.—T.C. resolved that B.S. prepare plans for a house to be erected, if possible, in blocks of four on vacant land at end of Cherry Garden-rd.

MANCHESTER.—Boddington's Breweries, Ltd., are proposing to make improvements to "Horse and Jockey" public-house, having frontages to Coral-st., and Heywood-st., Ardwick, Manchester. Plans by G. Westcott, architect, 13, Bridge-st.—Rev. H. A. Wichltuch and members of St. Thomas Church, Lower Crumpsall, are proposing to erect a new rectory. Plans by the diocesan architect, Mr. R. Martin, of Preston & Martins, 9, Deansgate.—Directors of Manchester Race Course proposing to erect sheds. Plans by E. J. Bentley & Sons, 274, Deansgate.—J. H. Maybury & Son, architects, 19, Chapel-walks, are preparing plans for six shops, and houses on site at Whitechurch-road, Burton-road, Withington, for S. & E. Clough, 52, Manchester-road, Chorlton-cum-Hardy.

MANSFIELD.—T.C. passed plans for C. Blythe, 8 houses, Eakring-rd., and F. Slack, 3 houses, off Sutton-rd.

NELSON.—T.C. are to acquire land at Marsden Park for provision of an open-air school. B.S. is to prepare plans for school.

NEWCASTLE.—Greyhound Racing Association acquired Brough-park for the purpose of laying down an electric hare track. Between £30,000 and £35,000 is to be spent in alterations, and the scheme includes erection of covered-in stands, provision of cloak rooms, extensive refreshment accommodation, and other amenities. It is expected that there will be accommodation for between 60,000 and 70,000 spectators.—Joel Galleries in Newgate-st., are to be extended to the whole island-plot on which it stands. Messrs. J. & Joel Intract has purchased this site, and the whole will be rebuilt in due course.

NORTHFLEET.—Parish Council recommend borrowing of £2,27[illegible] for housing.

NOTTINGHAM.—Public Libraries and Museum Committee accepted tender for building library which it is proposed to erect at Lord Nelson-st., Sneinton. Same committee also decided to instal the open access system at Carlton-rd., and Hyson-green libraries.

OFFALY.—Commissioner for Co. Offaly approved engineer's scheme for operating theatres and other alterations in infirmary buildings at £3,600.

OLDHAM.—Lee & Wrigley, Ltd., are proposing to erect new mill. Plans by Winder & Taylor, architects and surveyors, 61, Union-st.

SALFORD.—Plans been approved by City Council for alterations and additions to the offices at Islington Mill, James-st., for H. W. Lee & Co. Plans been prepared in architect's department of Fine Cotton Spinners and Doublers Association, Ltd., 7, St. James-sq., Manchester.

* See also our List of Contracts, Competitions, etc.

RAMSBOTTOM.—Surveyor been instructed to prepare plans and estimates for further houses by U.D.C.

SCARBOROUGH.—Plans of cinema in Albemarle-cres., to be built by Londesborough Theatre and Picture House Co., Ltd., been approved. Architects, Gray & Evans, 51, North John-st., Liverpool.

SCARBOROUGH.—Provision of club house on South Cliff Golf Course is receiving the attention of the Property Committee. A sketch of suggested building by B.E., considered and approved generally.

SHEFFIELD.—E.C. recommend City A., to undertake the erection of the nursery school at Denby-st., by direct labour, at £3,750, and also to obtain tenders for erection of proposed new schools at Abbey-la, and Wybourn. The purchase of Bents Green Louge been completed and plans for adaptation have been submitted to B.E. Sites have been acquired for school on Longley estate. Steps being taken to obtain compulsory order for purchase of site for school at Far-la., Wadsley, and negotiations are in hand for purchase of site for intermediate school in Darnall-Handsworth area. A plan of site suggested by Improvement Surveyor for school near centre of city has been sent to the City Architect for his observations. Sub-Committee of E.C. recommend the City A. to prepare plans for erection, in Earldom-rd., of public elementary school for accommodation of 800 children.

SOUTHEND-ON-SEA.—C.B. passed plans :—4 houses, Elmsleigh-drive, M. Kempen; 6 bungalows and garage, Broadclyst-gardens, F. W. Goldsworthy; 6 houses, St. James-gardens, F. J. Gregory; 16 houses, Brunswick-rd., Purkiss Bros.; 3 houses, Central-av., W. T. Cusdin; 9 houses, Park-la., Southchurch, E. Wingrave; 8 houses, Park-la., G. W. Potter; 6 garages, Kensington-rd., Thorby Bros.; 10 houses, Ambleside-drive, F. J. Goldsworthy; 3 houses, Rylands-rd., A. S. Chalkley; 4 houses, Vaugham-rd., A. Dines.

ST. ALBANS.—City Council decided upon a further housing scheme and a number of houses are to be erected on land on west side of Sandridge-rd.—M.H. sanctioned loan of £6,000 for the purchase of the premises at 36-38, St. Peter's-st., for municipal offices.—Plans been passed for public offices and caretaker's quarters, in Victoria-st., for St. Albans R.D.C.

STOKE-ON-TRENT.—Corporation decided to acquire sites for erection of 2,000 houses.

SURBITON.—Malden Council been informed that L.C.C. and Surrey C.C. considering plans for reconstruction of the bridge over Beverley Brook, Kingston Vale.

SWANSEA.—C. B. are to ask M.H. to sanction £959 10s. for electric wiring various schools.—B.A., submitted plans for alterations and additions to Cwm school, the estimated cost of which is £5,200, and Council resolved that plans be forwarded to B.E. for approval, and application be made to M.H. for sanction to borrowing of the money.—Land has been leased to Rev. W. J. Bromham for vicarage.—Ground has also been leased to trustees of Carmarthen-rd., Chapel for new chapel.—Borough Estate Agent reported that Health Committee required a larger piece of land for erection of a public convenience, at Gorse-rd., Cwmbwrla.—B.E. has prepared plans and estimates for convenience on the site near the junction of Church-rd., and Llansamlet-rd. The estimated cost is £1,580 17s. 4d., and site £100, and the C.B. resolved that application be made to M.H. for sanction.—Council resolved that scheme submitted by the Chief Engineer for drainage of Treboeth, Trewyddfa and Trewyddfa-Fach at £69,000 be approved, and application be made to M.H. for sanction to borrow the necessary money.—The Swansea Council has agreed to join in with the other local Councils and County Council with regards to a College of Domestic Arts. C.B. has approved Brough Estate Agent report that he obtain from Newton Church Club Committee a piece of land, suitable as a site for a sub-station. Plans passed: 4 houses, Beattie-st., Cwmbwrla, for Rogers & Davies; 3 houses, Pwll-st., Landore, for Mrs. M. A. Dennis; 2 houses, Neath-rd., Peniel Green, for Thos. Rees; 2 houses, Walters-st., Manselton, for Weaver Bros.; warehouse, Carmarthen-rd., for J. O. Watkins; 4 houses, Baglan-st., for A. E. Wright; factory, Station-rd., Cockett, for C. Strutton; 4 houses, Station-rd., Cockett, for Rees Jones; 2 houses, Fern-st., for J. Willis; 2 houses, 311 and 312, Pentregethin-rd., for H. E. Thomas; 19 houses, Grenfell Park estate, for J. R. Banfield & Son.

THAMES DITTON.—Esher and Ditton's U.D.C. have under consideration plans for development of Palace estates, where it is proposed to erect 119 houses.

THIRSK.—Lambert Memorial Hospital prepared scheme for extensions to institution at £800.

TWICKENHAM.—At a cost of £13,000 E.C. is to build a new elementary school at Whitton.

UPPER BELVEDERE.—Royal Arsenal Co-operative Society acquired a plot of adjacent land, upon freehold which a branch is to be built.

UXBRIDGE.—R.D.C. passed plans :—36 bungalows, Uxbridge Manor estate, Hillingdon; 14 houses, Wood End Green estate, Northolt; 2 houses, Swakeleys-drive, Hillingdon.

WALSALL.—B.G. accepted the tender of a Bloxwich firm to erect a residence for Walsall Workhouse medical officer at £1,890.

WARRINGTON.—C.B. received M.H. sanction to borrowing £19,144 for laying of trunk main from Liverpool Aqueducts at Norton to Stockton Heath, and £1,565 for purchase of land near Alder-la., as site for public elementary school.

WEST BROMWICH.—E.C. recommend purchase from Corporation Housing and Town Planning Committee of site on Charlemont housing estate, with a frontage to Willett-rd. and Connor-rd., for school purposes.

WESTMEATH.—County Board of Health is to negotiate loan of £4,000 for repairs to Athlone Hospital, and sewerage at County Home Hospital.

WIGAN.—Corporation decided to carry out by direct labour scheme for 226 houses on Wallfield site, estimated to cost £116,727.

YIEWSLEY.—U.D.C. approved a plan for sports pavilion for Wesleyan Hall.

NEW COMPANIES

THE particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, of 116 & 117, Chancery-lane, W.C.2, from the documents available at the Companies' Registry.

MODERN HOMESTEADS, LTD. (223,711). Registered August 10. 346/7, Winchester House, Old Broad-street, E.C. To acquire any land, and to lay out and prepare the same for building purposes, etc. Nominal capital, £10,000.

W. T. CANNING & Co., LTD. (223,749). Registered August 11. 47, Goldhawk-road, Shepherd's Bush, W.12. Builders, decorators, electricians, and contractors, etc. Nominal capital, £2,000.

G. W. BROOME & POOLE, LTD. (223,706). Registered August 10. Builders and contractors. 7a, Prince-street, Madeley, Salop. Nominal capital, £3,100.

HATCHARD & PERCEVAL, LTD. (223,648). Registered August 6. 23, Wedmore-street, Upper Holloway, N.19. General painters and sprayers, coach builders, etc. Nominal capital, £2,000.

LEACH & SON (ILFORD), LTD. (223,654). Registered August 6. Ironfounders, builders' merchants, and wallpaper factors, etc. 8, The Façade, High-road, Goodmayes. Nominal capital, £10,000.

JOHN FRASER (SUTTON), LTD. (223,592). Registered August 2. 137 and 139, High-street, and 2, West-street, Sutton. Ironmongers, builders, builders' merchants, etc. Nominal capital, £35,000.

JOHN WALKER (KINGSWINFORD 1927), LTD. (223,618). Registered August 4. Kingswinford, Staffs. Manufacturers of and dealers in retorts, firebricks, fireclay, and glazed bricks, etc. Nominal capital, £25,000.

J. C. BAILEY & Co., LTD. (223,591). Registered August 2. 25, Tixall-road, Hall Green, Birmingham. Builder and contractor. Nominal capital, £500.

BREESLABS, LTD. (223,261). Registered July 18. 31, Great Queen-street, Kingsway, W.C. 2. Manufacturers of and dealers in breeze slabs, concrete blocks, cements, and all building materials, etc. Nominal capital, £1,510.

FULLER'S EARTH MINING CORPORATION, LTD. (223,196). Registered July 14. Fuller's earth, cement, concrete and builders' requisites, etc. Nominal capital, £2,100.

POOLE & VICKERS, LTD. (223,326). Registered July 20. Spondon, Derby. Getters and workers of, agents for and dealers in sand, gravel, lime, cement and minerals, etc. Nominal capital, £200.

HEAL & JONES, LTD. (223,826). Registered August 15. Plant House, Longfield-avenue, Ealing, W.5. Architects, valuers, estate agents, builders, etc. Nominal capital, £500.

EVAN O. C. HOWELLS, LTD. (223,783). Registered August 13. 81, Raglan-street, Coventry. Builders, builders' merchants, etc. Nominal capital, £5,000.

G. & F. PENN, LTD. (223,728). Registered August 11. Builders, road, pavement, sewer and drain makers and repairers, etc. Nominal capital, £4,000.

NORTHERN CLAY PRODUCTS, LTD. (223,779). Registered August 12. 18, Grainger-street West, Newcastle-upon-Tyne. Manufacturers of and dealers in bricks, tiles, etc. Nominal capital, £20,000.

E. HENSHALL & Co., LTD. (223,727). Registered August 11. Copeland-street, Stoke-on-Trent. Builders' merchant. Nominal capital, £1,500.

BECONTREE SHOPS, LTD. (223,556). Registered July 30. 150, Cheapside, E.C.2. Builders, contractors, builders' merchants, etc. Nominal capital, £2,000.

A. E. SYMES, LTD. (223,411). Registered July 25. Albert Works, Carpenters-road, Stratford, E. Builders and contractors, etc. Nominal capital, £25,000.

COTTAM HALL BRICK AND TILE CO., LTD. (223,371). Registered July 22. Nominal capital, £10,000

TRADE NEWS

Artificial Light and Health.

During the past fortnight, the public has been mystified by advertisements and show-cards in electrical dealers' windows, asking the question "Are you a Shemsu-Ra?" Shemsu-Ra was the cult of Sun-worship in Egypt 8,000 years ago, and the present day counterpart in the cult of good lighting. The link between Sun-worship and respect for the health giving artificial light of the Pearl Osram is a strong one, and it is explained and elaborated in a well produced booklet which the General Electric Co., Ltd., have just issued entitled "Sun-worship, B.C. 6000—A.D. 1927." It deals in interesting fashion with the cult of sun-worship—the worship of good light by the ancient Egyptians thousands of years ago. Sun-worshippers are designated "Sun-folk" by Sir E. A. Wallis Budge, M.A.Litt.D., sometime keeper of the Egyptian and Assyrian Antiquities in the British Museum, and his account of their devotion to the god of good light is most interesting. The booklet may be obtained from electrical dealers on request.

Automatic Control Gas Cookers.

The Radiation "New World" Gas Cooker, with its "Regulo" automatic heat control, direct bottom-flue-outlet, and single burner in the oven, was introduced by Radiation, Limited, in 1923. In the short space of time which has elapsed, the "New World" Cooker has attained a high position, indeed, we understand that it is used to represent the gas industry when comparisons between various methods of cooking are to be made. A gas oven should be designed so that the hot stream of products which leaves the burners shall not come into immediate contact with the food to be cooked, as in such an event burning may result. To avoid this happening, a gap has to be left between the cooking zone and the wall of the oven. With two burners it is necessary to provide two spaces, one at each side of the oven directly over the burners. With the single burner, only one such space is required, and in the "New World" construction, owing to the position of the burner, this space is situated at the back of the oven.

In the present series of "New World" Cookers, which are manufactured by all the six Radiation firms, all working parts are standardised and interchangeable, but the exterior designs vary in the individual makes. Several improvements of design to reduce labour and increase the efficiency of the cooker still further have been introduced. At the same time the range of temperatures controlled by the "Regulo" has been extended downwards, and an additional low temperature cooking zone has been provided at the bottom of the oven.

Full information on this subject may be obtained from Radiation, Ltd., 164-172, Queen Victoria-street, E.C.4.

All-Copper Ventilators.

Messrs. Ewart & Son, Ltd., of 346-350, Euston-road, N.W.1, have issued a new list of all-copper ventilators, with current reduced prices now in force. The list contains many new designs of all-copper ventilators, and gives details of approved methods of fixing. "First cost is last cost" is the ideal of building construction, and Ewart's all-copper ventilator reduces the cost of building maintenance, as, we understand, no painting or repair is required.

Electric Lamps.

The Philips Lamps, Ltd., 145, Charing Cross-road, W.C.2, will be glad to forward to all interested, a copy of their new leaflet 167, which contains full particulars of their lamps marketed in this country. In addition to electric lamps for ordinary purposes, the firm manufactures lamps of every description for all industrial purposes.

Continued on p. 524.)

PRICES CURRENT OF MATERIALS.*

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge.	£ s. d.
Best Stocks	4 5 6
Second Hard Stocks	3 19 6

Per 1,000. Delivered at London Goods Stations.	£ s. d.		£ s. d.
Flettons, at King's Cross	2 14 3	Best Blue Pressed Staffs	9 5 0
Do. grooved for Plaster	2 16 3	Do. Bullnose	9 15 0
Do. Bullnose	3 8 3	Blue Wire Cuts	7 5 0
Best Stourbridge Fire Brick :—			
2½ in.	8 11 0	3 in.	10 3 0
GLAZED BRICKS—		D'ble Str'tch'rs	29 10 0
Best White Ivory, and Salt Glazed Stretchers	21 0 0	D'ble Headers	26 10 0
Headers	20 10 0	One Side and two Ends	30 10 0
Quoins, Bullnose and 4½ in. Flats	27 10 0	Two Sides and one End	31 10 0
		Splays and Squints	28 0 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours. Hard Glaze, £5 10s. extra over white.

BREEZE CONCRETE SLABS.

Delivered London.

	s. d.		s. d.
2 in. per yd. super	1 11	3 in. per yd. super	2 9
2½ in. „ „	2 4	4 in. „ „	3 6

	s. d.	
Thames Ballast	10 6	per yd.
Pit Sand	13 9	„ „
Thames Sand	14 6	„ „
Best Washed Sand	14 6	„ „
¾in. Shingle for Ferro-Concrete	12 9	„ „
½in.	14 0	„ „
¾in. Broken Brick	11 6	„ „
Pan Breeze	8 0	„ „

delivered 2 miles radius Paddington.

Per ton delivered in London area in full van loads.

Best Portland Cement. British Standard Specification. Test £2 13 0 to £2 15 0 46s. alongside at Vauxhall in 80-ton lots.		
Ferrocrete per ton extra on above	0	10 0
Super Cement (Waterproof)	4	3 0
Roman Cement	8	15 0
Parian Cement	5	15 0
Keene's Cement, White	5	15 0
„ Pink	5	10 0
Plaster, Coarse, Pink	3	0 0
„ „ White	3	12 6
„ Fine	5	12 0
Sirapite, Coarse	3	9 0
„ Finish	3	17 0
Grey Stone Lime	2	10 9
Chalk Lime	2	10 9
Best Ground Blue Lias Lime	2	13 6
Hair per cwt.	2	2 6
Granite Chippings	1	12 0

NOTE.—Sacks are charged 1s. 9d. each and credited 1s. 6d. if returned in good condition within three months carr. pd.

Stourbridge Fireclay in s'cks 37s. 0d. per ton at rly. dp.

STONE.

	s. d.
BATH STONE.—Delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube	2 10
PORTLAND STONE.—	
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L. & S.W.R., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube	4 4½
Do. do. delivered on road wagons at above stations, per ft. cube	4 5½
White basebed, 3d. per ft. cube extra.	
NOTE.—1d. per ft. cube extra for every foot over 20 ft. *average*, and ½d. beyond 30 ft.	
HOPTON-WOOD STONE—	
Delivered at any Goods Station, London.	s. d.
Random blocks from 10 ft. and over P. ft. cb.	17 0
Sawn two sides „	27 0
Sawn three or four sides „	32 0
YORK STONE, BLUE—*Robin Hood Quality.*	
Delivered at any Goods Station, London.	
6 in. sawn two sides landings to sizes (under 30 ft. super) Per ft. super	5 6
6 in. rubbed two sides, ditto „	6 0
3 in. sawn two sides slabs (random sizes) „	2 3½
2 in. to 2½ in. sawn one side slabs (random sizes) „	1 6½
1½ in. to 2 in. ditto, ditto „	1 4
HARD YORK—	
Delivered at any Goods Station, London.	
Scappled random blocks Per ft. cube	6 3
6 in. sawn two sides landing to sizes (under 40 ft. super) Per ft. super	5 1½
6 in. rubbed two sides, ditto „	6 1½
4 in. sawn two sides slabs (random sizes) „	2 10
3 in. ditto ditto „	2 1½
2 in. self-faced random flags Per yd. super	9 0

CAST STONE.

Delivered in London area in full-van loads, per ft. cube :—Plain, 8s. 6d. ; Moulded, 9s. 6d. ; Cills, 10s. 0d.

WOOD.

GOOD BUILDING DEAL.

Inches.	per stan.	Inches.	per stan.
4 × 11	£28 0	3 × 6	£21 0
4 × 9	25 0	3 × 11	25 0
4 × 8	24 0	2 × 11	25 0
4 × 7	23 0	3 × 9	24 0
3 × 8	21 0	2½ × 9	23 0
3 × 7	20 0	3 × 4½	22 0
2½ × 7	20 0	3 × 4	22 0

PLANED BOARDS.

1 × 11	£27 0	1 × 9	£26 0

PLAIN EDGE FLOORING.

Inches	per sq.	Inches	per sq.
¾	20/-	1¼	31/-
¼	22/-	1½	34/-
1	25/-		

TONGUED AND GROOVED FLOORING

Inches.	per sq.	Inches.	per sq.
1	25/-	¾	16/6
1¼	31/-	¼	19/-
1½	34/-	1	24/-

BATTENS.

Inches.	s. d.
¾ × 2	2 6 per 100 ft.

SAWN LATHS.

Per bundle	0 2 4

1" AND UP THICK.

	£ s. d.	£ s. d.
Dry Austrian Wainscot, per ft. cube	0 16 0 to	0 18 0
Dry American and/or Japanese Figured Oak, ft. cube	0 15 0 to	—
Dry American and/or Japanese Plain Oak, ft. cube	0 11 0 to	0 13 0
Dry sq. edged Honduras Mahogany, ft. cube	0 16 0 to	0 18 0
Dry Log cut Honduras Mahogany, ft. cube	0 18 0 to	1 1 0
Dry Cuba Mahogany, ft. cube	1 4 0 to	1 10 0
Dry Teak, ft. cube	0 13 0 to	0 15 0
Dry American Whitewood, ft. cube	0 11 0 to	0 14 0
Best Scotch glue, per cwt.	4 10 0 to	—
Liquid Glue, per cwt.	4 7 0 to	5 10 0

SLATES.

First quality slates from Bangor or Portmadoc carriage paid in full truck loads to London Rate Station. Per 1,000.

	£ s. d.		£ s. d.
24 by 12	32 18 4	18 by 10	18 12 11
22 by 12	29 17 11	18 by 9	16 9 2
22 by 11	27 14 2	16 by 10	15 12 6
20 by 12	26 5 0	16 by 8	12 3 9
20 by 10	22 10 0		

TILES.

Delivered at London rate stations in full truckloads of not less than 4 tons. Per 1,000 f.o.r. London.

Best machine-made tiles from Broseley or Staffordshire district	5 12 6
ditto hand-made ditto	5 17 6
Ornamental ditto	6 2 6
Hip and valley tiles (per dozen) { Hand-made	0 9 6
{ Machine-made	0 9 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION, PER TON—	£ s. d.
R.S. Joists, cut and fitted	12 10 0
Plain Compound Girders	14 10 0
„ Stanchions	16 10 0
In Roof Work	19 10 0

MILD STEEL ROUNDS.

To London Station, per ton.

Diameter.	£ s. d.	Diameter.	£ s. d.
¼ in.	12 0 0	⅝ in. to ¾ in.	10 15 0
½ in.	11 0 0	⅞ in. to 2½ in.	10 10 0

WROUGHT-IRON TUBES AND FITTINGS—

(Discount off List for lot of not less than £7 net value delivered direct from Works, 2½ per cent. less above gross discounts, carriage forward, if sent from London Stocks.)

	Tubes.	Fittings Over ½"	Flanges Over ½"
Black Gas	67½%	45%	55%
Galvanised Gas	52½%	35%	45%
Blue Water	62½%	40%	50%
Galvanised Water	46½%	30%	40%
Red Steam	57½%	35%	45%
Galvanised Steam	40 %	25%	35%

C.I. HALF-ROUND GUTTERS—London Prices ex Works

Per yd. in 6 ft. lengths.	Gutters.	Angles and Nozzles.	Stop Ends.
3 in.	1/3½	11½d.	3½d.
3½ in.	1/4½	1/1½	3½d.
4 in.	1/6	1/3	3½d.
4½ in.	1/7½	1/4½	4½d.
5 in.	1/10½	1/6½	5½d.

O.G. GUTTERS.

3 in.	1/8	1/4½	3½d.
3½ in.	1/8	1/4½	3½d.
4 in.	1/9½	1/4½	3½d.
4½ in.	1/11½	1/7½	4½d.
5 in.	2/4½	1/10½	5½d.

RAIN-WATER PIPES, &c.

per yd. in 6 fts.	Pipe.	Bends, stock angles.	Branches, stock angles.
2 in. plain	1/10½	1/3	1/9½
2½ in. „	2/0½	1/4½	2/1½
3 in. „	2/6	1/9	2/7½
3½ in. „	2/11½	2/0½	3/0½
4 in. „	3/5	2/6½	3/8½

L.C.C. COATED SOIL PIPES—London Prices ex Works

	Pipe.	Bends. stock angles.	Branches. stock angles.
	s. d.	s. d.	s. d.
2 in. per yd. in 6 fts. plain	3 3	2 4½	2 10
2½ in. „	3 9	2 7½	3 7
3 in. „	4 6	2 10	4 2½
3½ in. „	4 11½	3 7	4 11½
4 in „	5 5½	4 0½	5 9

L.C.C. COATED DRAIN PIPES—London Prices ex Works.

	Pipe.	Bends, stock angles.	Branches, stock angles.
	s. d.	s. d.	s. d.
3 in. per yd. in 9ft. lengths	4 4	5 1	8 0½
4 in. „ „	6 2	5 8	10 0
5 in. „ „	7 2	10 10	17 1
6 in. „ „	8 6	13 2	21 9

Gasken for jointing, 38/6 per cwt.

IRON—	Per ton in London. £ s. d.	£ s. d.
Common bars	13 0 0 to	14 10 0
Staffordshire Crown Bars— Good merchant quality	14 5 0 to	15 15 0
Staffordshire Marked Bars	16 5 0 ..	17 5 0
Mild Steel Bars	10 0 0 ..	11 0 0
Steel Bars, Ferro-Concrete quality, basis price	10 0 0 ..	11 0 0
Hoop iron, basis price	12 0 0 ..	13 0 0
„ Galvanised	27 0 0 ..	28 0 0
Soft Steel Sheets, Black—		
Ordinary sizes to 20 g.	13 5 0 ..	14 5 0
„ „ „ 24 g.	14 5 0 ..	15 5 0
„ „ „ 26 g.	16 5 0 ..	17 5 0
Sheets Flat Best Soft Steel, C.R. and C.A. quality—		
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 10 0 ..	16 10 0
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 22 g. and 24 g.	16 10 0 ..	17 10 0
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 26 g.	18 10 0 ..	20 10 0
No 1 quality £4 per ton extra.		
Flat and Galvanised Corrugated Sheets—		
Ordinary sizes, 6 ft. to 9 ft. to 20 g.	18 0 0 ..	19 0 0
Ordinary sizes, 6 ft. to 9 ft. to 22 g. and 24 g.	18 10 0 ..	19 10 0
Ordinary sizes 6 ft. to 9 ft. to 26 g.	21 10 0 ..	22 10 0
Sheets Galvanised Flat, Best quality—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	22 0 0 ..	23 0 0
Best Soft Steel Sheets, 22 g. and 24 g.	24 0 0 ..	26 0 0
Best Soft Steel Sheets, 26 g.	25 10 0 ..	26 10 0
Cut Nails, 3 in. to 6 in.	19 0 0	
(Under 3 in. usual trade extras.)		

METAL WINDOWS.—Standard sizes, suitable for complete houses, including all fittings, painting two coats, and delivery to job, average price about 1s. 4d. to 1s. 7d. per foot super.

LEAD, &c.

(Delivered in London.)	£ s. d.
LEAD—Sheet, English, 4 lb. and up	29 15 0
Pipe in coils	30 5 0
Soil pipe	33 5 0
Compo Pipe	33 15 0

NOTE.—Country delivery, 20s. per ton extra : lots under 3 cwt. 3s. per cwt. extra, and over 3 cwt. and under 5 cwt., 1s. 6d. per cwt. extra. Cut to size 25s. cwt. extra.

Oil lead, ex London area, at Mills per ton 19 15 0

COPPER.

	s. d.
Seamless Copper tubes (basis) per lb.	1 0½
Strong sheet „	1 0
Thin „	1 1
Copper nails „	2 3
Copper wire „	2 4

PLUMBERS' BRASS WORK.

Delivered in London.

NEW RIVER PATTERN SCREW DOWN BIB COCKS FOR IRON.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
29/- 45/- 76/- 153/- 246/- 510/- per doz.

NEW RIVER PATTERN SCREW DOWN STOP COCKS AND UNIONS.

½ in. ¾ in 1 in. 1¼ in. 1½ in. 2 in.
41/6 62/- 92/- 174/- 300/- 588/- per doz.

RIVER PATTERN SCREW DOWN MAIN FERRULES.

½ in. ¾ in. 1 in.
39/6 60/- 116/6 per doz.

CAPS AND SCREWS.

1¼ in. 1½ in. 2 in. 3 in. 3½ in. 4 in.
7/6 10/- 14/- 23/- 30/- 42/- per doz.

DOUBLE NUT BOILER SCREWS.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
7/6 11/- 17/- 29/- 36/- 63/- per doz.

BRASS SLEEVES.

1¼ in. 2 in. 3 in. 3½ in. 4 in.
10/- 12/- 20/- 24/- 31/-per doz.

NEW RIVER PATTERN CROYDON BALL VALVES, S.F.

½ in. ¾ in. 1 in. 1¼ in. 1½ in.
35/- 56/- 98/- 162/- 228/- per doz.

DRAWN LEAD P. & S. TRAPS WITH BRASS CLEANING SCREW.

	1¼ in.	1½ in.	2 in.	3 in.
8 lbs. P. traps	33/-	41/-	56/-	101/- per doz.
8 lbs. S. traps	35/-	45/-	66/-	126/- „

TIN.—English Ingots, 3/1 per lb. SOLDER.—Plumber's 1/3, Tinmen's 1/6. Blowpipe 1/7 per lb.

PAINTS, &c.

Raw Linseed Oil, in pipes per gallon	0	3	0
„ „ „ in barrels „	0	3	2
„ „ „ in drums „	0	3	4
Boiled „ „ in barrels „	0	3	4
„ „ „ in drums „	0	3	7
Turpentine in barrels „	0	3	9
„ in drums (10 gall.) „	0	3	11
Genuine Ground English White Lead, per ton	44	0	0
(In not less than 5 cwt. casks.)			

GENUINE WHITE LEAD PAINT—

"Father Thames," "Nine Elms," "Park," "Supremus," "St. Paul's," "Morganswyte," "Polacco," "J." Brand and other best brands (in 14 lb. tins) not less than 5 cwt. lots per ton delivered 63 10 0

Red Lead, Dry (packages extra)	per ton	36	0 0
Best Linseed Oil Putty	per cwt.	0	15 0
Filicol	„	0	15 6
Size. XD quality	fkn.	0	3 6

(Continued on p. 522.)

* The information given on this page has been specially compiled for THE BUILDER and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

PRICES CURRENT OF MATERIALS (*contd.*)

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

	Per ft.		Per ft.
15 oz. fourths ..	2¾d.	32 oz. fourths	6¾d.
15 „ thirds ..	3¾d.	32 „ thirds	9¼d.
21 „ fourths ..	4d.	Obscured Sheet, 15 oz.	3¾d.
21 „ thirds ..	4¾d.	„ „ 21 „	4¾d.
26 „ fourths ..	4¾d.	Fluted 15 oz. 6¼d., 21oz.	9d.
26 „ thirds ..	6¾d.	En'lled 15 oz. 4¾d., 21oz.	6¾d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

	Per ft.
¼ Rolled plate	4¼d.
5/16 Rough rolled	5¼d.
⅜ Rough rolled	5¾d.
Figured Rolled, Baltic, Oceanic, Arctic Stippolyte, and small and large Flemish White	6d.
Ditto, tinted	8¾d.
Rolled Sheet	5¾d.
White Rolled Cathedral	5¾d.
Tinted do.	7¾d.

Cast plate is same price as rough rolled.

VARNISHES, &c.

		Per Gallon. £	s.	d.
Oak Varnish	do	0	14	0
Fine ditto	ditto	0	16	0
Fine Copal	ditto	0	18	0
Pale Copal	ditto	1	0	0
Pale Copal Carriage	ditto	1	4	0
Best ditto	ditto	1	12	0
Floor Varnish	Inside	0	18	0
Fine Pale Paper	ditto	0	18	0
Fine Copal Cabinet	ditto	1	2	6
Fine Copal Flatting	ditto	1	0	6
Hard Drying Oak	ditto	0	18	0
Fine Hard Drying Oak	ditto	0	19	0
Fine Copal Varnish	ditto	1	0	0
Pale ditto	ditto	1	2	0
Best ditto	ditto	1	12	0
Best Japan Gold Size		0	12	6
Best Black Japan		0	10	6
Oak and Mahogany Stain (water)		0	12	0
Brunswick Black		0	7	6
Berlin Black		0	14	6
Knotting (patent)		1	5	0
French and Brush Polish		0	17	0
Liquid Dryers in Terebine		0	9	0
Culrass Black Enamel		0	7	0

NATIONAL FEDERATION OF HOUSE BUILDERS

Scarborough Conference.

The half-yearly meeting of the National Federation of House Builders was commenced yesterday at Scarborough, under the presidency of Mr. J. W. Comben, of London. The Federation were given a civic welcome by the Mayor of Scarborough, Alderman J. Bielby, J.P., and on his invitation the conference meetings were held in the Town Hall. In the afternoon an important discussion was held on the possibility of building houses to rent. All builders who have been accustomed to that class of business in pre-war times are turning their attention to the possibility of erecting houses in large numbers to be let to tenants. The great point in this consideration is whether the builder can offer an attractive investment to the property owner. If he cannot do so he cannot build to rent. He may be able to erect a comparatively small number of houses which he will have to hold himself, but unless houses can be built to sell to the investor, the problem has not been solved. In addition to the important organisation matters to be discussed this morning (Friday), the conference will discuss other matters. The question of the taxation of unsold ground rents will be before the meeting, and in this connection the Federation may find it necessary to take up a definite attitude. The other matters of building society loans and road-making specifications and costs are also of very great importance to members. A full account of the conference will be given in a future issue of this journal.

Slater and Tiler's Estate.

Mr. Henry Wragg, of 41, Clarence-road, Chesterfield, slater and tiler, who died on June 17, aged 56 years, left estate of the gross value of £49,149, with net personalty £44,405.

Plumber's Estate.

Mr. John Johnston, of Irvine, N.B., plumber and sanitary engineer, left £7,194.

THE SCOTTISH BUILDER

HOUSING PROGRESS IN SCOTLAND

The following figures show the progress that has been made in State-aided housing schemes in Scotland to August 31, 1927:—

	Completed	Under Construction
1919 Act	25,542	8
Private Subsidy Schemes (1919 Additional Powers Act)	2,324	—
Slum Clearance Schemes	5,872	2,925
1923 Act:—		
By Local Authorities ...	3,694	311
By Private Enterprise...	10,703	2,589
1924 Act:—		
By Local Authorities ...	12,557	12,713
By Private Enterprise...	306	172
Demonstration Houses ...	17	—
Steel houses erected on behalf of Government by Scottish National Housing Company	1,852	282
	62,867	19,000

NEW BUILDINGS IN SCOTLAND

West Fife.—EXTENSION.—The Dunfermline and West Fife Hospital Committee have decided that a wooden extension should be built. The cost will be £700, and the extension will accommodate 16 beds.

Nairn.—HARBOUR.—By nine votes to six, Nairn Town Council have decided to take the necessary steps to proceed with the new harbour scheme.

Glasgow.—AERODROME.—The Corporation are considering various sites with regards to the erection of a Municipal Aerodrome. An estimate by an expert of the cost of the scheme is in the region of £50,000.

Ayr.—LIBRARY.—The Ayr Carnegie Library Committee have approved the plans for an extension to the Ayr Library.

Dunfermline.—EXTENSION.—The ceremony of cutting the first sod in connection with the extension of the Dunfermline and West of Fife Hospital extension has been performed by Mrs. Andrew Carnegie and Lady Veronica Bruce. The plans of the new hospital, as adopted, provided for 42 beds, but a further extension could be made later for an additional building cost of about £7,000.

Glasgow.—HOUSING.—An offer amounting to £86,894, for the erection of 228 tenement houses at Ruchill, has been recommended for acceptance by the Housing Committee of the Corporation. The Corporation are also recommended to accept tenders amounting to £53,171 for the execution of works in connection with the erection of the proposed new building between Gallowgate and London-street.

Paisley.—EXTENSION.—The Dean of Guild Court has passed plans presented by the Renfrewshire Education Authority for the erection at the East Public School of new buildings, providing for eight new classrooms and accommodation for 400 pupils.

Castlecary.—BRIDGE.—Work has commenced in connection with the construction of a new bridge over the Forth and Clyde Canal at Castlecary, Stirlingshire. The bridge is to cost £6,205, and the new approach to the bridge will cost between £500 and £600. The contractors are Sir William Arrol & Co., Ltd.

Dundee.—SCHOOL.—The Dundee Education Authority have bought a considerable tract of ground on the Dudhope estate as a site for the new north end school.

Obituary.

The death has occurred, at 127, Union-grove, Aberdeen, of Mr. Charles Gill, builder.

BUILDING TRADE WAGES IN SCOTLAND.*

THE following are the present rates of wages in the building trade in the principal towns of Scotland. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Labourers—Masons', Bricklayers', Plasterers'.
Aberdeen	1/8	1/8½	1/8	1/8	1/8	1/8	1/7	10½d to 1/1
Airdrie	1/8	1/8	1/8	1/8	1/8	—	1/6½	1/3
Alexandria	1/8	1/8	1/8	1/8	1/8	1/8	—	1/2½ to 1/3½
Arbroath	1/7	1/7	1/7	1/7½	1/7	1/7	1/5½	1/1½
Ayr	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3
Bathgate	1/8	1/8	1/8	1/8½	1/8	1/8	1/6½	1/2 to 1/3
Blairgowrie	1/7	1/7	1/7	1/7½	1/5	1/7	1/4	10d. to 1/-
Bo'ness	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3
Coatbridge	1/8	1/9	1/8	1/8	1/8	—	1/6½	1/3½
Dumbarton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Dumfries	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Dundee	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3
Dunfermline	1/8	1/8	1/8	1/9	1/8	1/8	1/8	1/3½
Edinburgh	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Falkirk	1/7½	1/7½	1/7	1/8	1/7	1/7	1/6½	1/2½
Fort William	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/2
Galashiels	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Glasgow	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Greenock	1/8	1/8	1/8	1/9	1/8	1/8	1/7	1/0½ to 1/3½
Hamilton	1/8	1/8	1/8	1/9	1/8	1/8	1/6½	1/3½
Hawick	1/7	1/7	1/7	1/7–1/7½	1/7	1/7	1/7	1/2½
Helensburgh	1/8	1/8	1/8	1/9	1/8	1/8	1/7	1/3½
Inverness	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/- to 1/2
Kilmarnock	1/8	1/8	1/8	1/9	1/8	1/8	1/8	1/3½
Kirkcaldy	1/8	1/8	1/8	1/9	1/8	1/8	1/8	1/3½
Kirkwall	1/5	1/5	1/4	1/5	1/5	1/4	1/4	1/-
Lanark	1/8	1/8	1/8	1/9	1/8	1/8	1/8	1/- to 1/2
Leith	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3½
Motherwell	1/8	1/8	1/8	1/9	1/8	1/8	1/6½	1/3½
Perth	1/8	1/8	1/8	1/9	1/8	1/8	1/6½	1/3
Stirling	1/8	1/8	1/8	1/9	1/8	1/8	1/8	1/3½
Stirlingshire (Eastern District)	1/8–1/10	1/8–1/10	1/8	1/9	1/7	1/8	1/6½	1/3½
Wishaw	1/8	1/8	1/8	1/9	1/8	1/8	1/7	1/3½

* The information given in this table is copyright. The rates of wages in the various towns in England and Wales are given on page 516.

CURRENT PRICES FOR BUILDING WORK IN LONDON*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	11	0
Add if in clay	„ „	1	0
Add for every additional depth of 6 ft.	„ „	0	6
Planking and strutting to trenches	per foot super	0	5
Do. to sides of excavation, including shoring	„ „	1	0

CONCRETOR.

		s.	d.
Portland cement concrete in foundation 1 to 6	per yard cube	38	0
Add if in underpinning in short lengths	„ „	7	0
Add if in floors 6 in. thick	„ „	3	3
Add if in beams	„ „	3	9
Add if aggregate 1 : 2 : 4	„ „	10	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	„ „	2	6

BRICKLAYER.

		£	s.	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	32	0	0
Add if in stocks	„	7	10	0
Add if in Staffordshire blues	„	22	0	0
Add if in Portland cement and sand	„	1	10	0

FACINGS.

		s.	d.
Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1½

POINTING.

		s.	d.
Neat flat struck or weathered joint	„ „	0	0	3

ARCHES.

		s.	d.
Extra only to the price of ordinary brickwork :—			
Fair external in half brick rings	„ „	0	0	10
Axed in stocks	„ „	0	1	9
Rubbed and gauged jointed in putty camber or segmental	„ „	0	6	0

SUNDRIES.

		s.	d.
Damp course in double course of slates breaking joint and bedded in Portland cement	„ „	0	1	0
Setting ordinary register grates and stoves	each	1	0	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	„	4	15	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard super	4	6
Three-quarter-inch vertical damp course	„ „	9	6
Three-quarter-inch on flats in two thicknesses	„ „	6	3
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	„ „	1	2

MASON.

		s.	d.
York stone templates fixed	per foot cube	13	0
York stone sills fixed	„ „	22	0
Bath stone and all labour fixed	„ „	10	6
Portland stone fixed	„ „	20	0

SLATER.

		s.	d.
Welsh 16 in. × 8 in. 3 in. lap, including nails	per square	72	9
Do. 20 in. × 10 in. Do. Do.	„	80	9
Do. 24 in. × 12 in. Do. Do.	„	90	0

CARPENTER AND JOINER.

		s.	d.
Fir framed in plates	per foot cube	5	0
Do. joists	„ „	5	6
Do. roofs, floors and partitions	„ „	6	0
Do. trusses	„ „	8	6

		¾″	1″	1¼″	2″
Deal rough close boarding	per sq.	35/6	40/-	45/-	72/-

		s.	d.
Flat centering for concrete floor, including struts or hangers	„	50	0
Do. to beams	per ft. sup.	1	0
Centres for arches	„	1	6
Gutter boards and bearers	„	1	0

FLOORING.

		¾″	1″	1¼″	1½″
Deal-edges shot	per sq.	—	44/6	53/-	60/6
Do. tongued and grooved	„	—	49/-	57/6	65/-
Do. matchings	„	45/-	51/-	—	—
Moulded skirting, including backings and grounds	per ft. sup.	1/6	1/9	2/0	2/6

SASHES AND FRAMES.

		s.	d.
One-and-a-half moulded sashes or casements	per foot super	1	10
Two Do. Do. Do.	„ „	2	1
Add for fitting and fixing	„ „	0	3
Deal-cased frames with 1 in. inner and outer linings, 1½ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares, double hung, double hung with pulleys, lines and weights; average size	„ „	3	9

DOORS.

		1½″	1¾″	2″
Two-panel square framed	per ft. sup.	2/1	2/4	2/6
Four-panel Do.	„	2/5	2/8	2/11
Two-panel moulded both sides	„	2/8	2/11	3/2
Four-panel Do. Do.	„	2/11	3/2	3/5

CARPENTER AND JOINER—continued.

FRAMES.

		s.	d.
Deal wrot moulded and rebated	per foot cube	14	0

		1″	1½″	1¾″
Plain deal jamb linings framed	per ft. sup.	1/7	1/8	1/11
Deal shelves and bearers	„	1/4	1/6	1/9
Add if cross-tongued	„	2d.	2d.	2d.

STAIRCASES.

		1″	1¼″	1½″	2″	2½″
Deal treads and risers in and including rough brackets		2/1	2/4	2/9	—	—
Deal strings wrot on both sides and framed		1/8	2/-	2/2	2/8	—

		s.	d.
Housings for steps and risers	each	0	11
Deal balusters, 1 in. × 1¼ in.	per ft. run	0	9
Mahogany handrail: average, 3 in. × 3 in.	„ „	6	0
Add if ramped	„ „	12	0
Add if wreathed	„ „	24	0

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	8½d.	Rim locks	2/-
Sash fasteners	11½d.	Mortice locks	4/6
Casement fasteners	1/5	Patent spring hinges and letting into floor and making good	19/-
Casement stays	1/2		
Cupboard locks	1/5		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	16	3
Plain compound girders	„	19	0
Do. stanchions	„	21	9
In roof work	„	27	6

RAIN-WATER GOODS.

		3″	4″	5″	6″
Half-round plain rebated joints	ft. run	1/6	1/9	2/-	2/6
Ogee Do. Do.	„	1/9	2/-	2/6	3/3
Rain-water pipes with ears	„	1/9	2/7	—	—
Extra for shoes and bends	each	4/4	5/11	—	—
Do. stopped ends	„	1/11	2/4½	3/7	4/-
Do. nozzles for inlets	„	2/2	2/7	3/10	4/3

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt.	43	0
Do. Do. in flats	„	42	0
Extra labour and solder in coated cesspools	each	6	9
Welf joint	per ft. run	0	6
Soldered seam	„ „	1	6
Copper nailing	„ „	0	6

		½″	¾″	1″	1½″	2″	4″
Drawn lead waste	per ft. run	1/2	1/9	2/-	3/4	4/-	—
Do. service	„	1/8	2/2	2/7	3/10	—	—
Do. soil	„	—	—	—	—	—	6/9
Bends in lead pipe	each	—	—	—	—	3/3	8/2
Soldered stop ends	„	1/2	1/8	2/1	2/10	3/6	—
Red lead joints	„	11d.	1/-	1/3	1/11	2/4	4/10
Wiped soldered joints	„	2/10	3/6	4/-	4/11	6/6	9/9
Lead traps and cleaning screws	„	—	—	—	14/7	19/6	—
Bib cocks and joints	„	6/4	9/7	15/4	41/-	—	—
Stop cocks and joints	„	15/4	17/2	25/8	64/-	—	—

PLASTERER.

		s.	d.
Render, float and set in lime and hair	per yard sup.	2	6
Do. Do. Sirapite	„ „	2	9
Do. Do. Keen's	„ „	4	0
Add saw lathing	„ „	1	7
Add metal lathing	„ „	2	6
(Not including hangers or runners, &c., for suspended ceilings.)			
Portland cement screed	„ „	2	2
Do. plain face	„ „	3	3
Mouldings in plaster	per 1 girth	0	1½
One-and-a-half granolithic pavings	per yard sup.	5	9

GLAZIER.

		s.	d.
21-oz. sheet plain	per foot sup.	0	8½
26-oz. Do.	„ „	1	0
Obscured sheet	„ „	1	1
⅛-in. rolled plate	„ „	0	9
¼-in rough rolled or cast plate	„ „	0	10½
¼-in wired cast plate	„ „	1	4

PAINTER

		s.	d.
Preparing and distempering, 2 coats	per yard sup.	0	9
Knotting and priming	„ „	0	7
Plain painting, 1 coat	„ „	0	9
Do. 2 coats	„ „	1	2
Do. 3 coats	„ „	1	9
Do. 4 coats	„ „	2	4
Graining	„ „	2	3
Varnishing twice	„ „	1	9
Sizing	„ „	0	3
Flatting	„ „	0	7
Enamel	„ „	1	1
Wax polishing	per foot sup.	0	6
French polishing	„ „	1	2
Preparing for and hanging paper	per piece, 2/- to 4/-		

*These prices apply to *new buildings only*. They cover superintendence by foreman and carry a profit of 10 % on the prime cost without establishment charges. A percentage of 1½ should be added for Employers' Liability and National Health and Unemployments Acts, and from 1s. 6d. per £100 for Fire Insurance. The whole of the information given on this page is copyright.

TRADE NEWS

(*Continued from page* 520.)

Boilers and Radiators.

The Travelling Exhibit of National Radiator Company, Ltd., of Hull, fitted with a working installation of the "Ideal" Cookanheat and "Ideal" Classic radiators, will demonstrate on October 3 at Bateman's Park, Matlock We learn that this firm has recently issued two folders which have been distributed to architects and trade firms. A copy will duly be sent to any firm who have not already received this. One folder relates to the "Ideal" Classic Radiators and sets forth graphically their special features and advantages. These radiators have just been installed in Marlborough House, the new London residence of H.R.H. the Prince of Wales. The other folder is intended for the assistance of trade firms in avoiding chimney-flue connections to heating and hot-water supply boilers which are likely to result in unsatisfactory operation of the apparatus.

Open Anthracite or Coke Fires.

The average person loves the open fire, and while he may not have been aware of the reason for this preference, there is no doubt that his liking for radiant heat as given off from the open fire is well founded. With the "Glow-Worm" open fires, the major portion of the heating surface is nearly vertical and this insures a steady flow of radiant heat in a more or less horizontal direction across the room, thereby insuring the ideal conditions of heating, i.e., the feet are warmed and the head is cool. The "Glow-Worm" open fires are designed to stand into any existing fireplace or chimney recess, and the "Hearth" model needs no fixing at all. Both of these fires are provided with a gas lighter, which for a cost of about a ½d. will light the fire in from five to ten minutes, and obviate the necessity of using wood or paper, rendering unnecessary the removal of dead embers from the grate. The makers, Messrs. O. Bruster & Richardson, 4, Lloyds-avenue, E.C.3, will be pleased to send illustrated leaflets of this fire.

Fireplaces in Stoneware.

A really attractive catalogue, List F.1927, illustrating various styles of their fusion and salt-glazed (Royal Doulton ware) fireplaces in stoneware, has been issued by the Well Fire and Foundry Co., Ltd., of 15, Berners-street, W.1. Stoneware is produced in one single fire of intense heat, and is not to be confused with faience, a material produced by two light firings. With regard to the salt-glazed ware, some fine colour effects are obtained, the beauty of which is enhanced by the fact that no two pieces are ever exactly alike. Glazed fusion stoneware is made in eggshell and antique glazed surfaces and stocked in various colours. In addition to numerous illustrations of styles of fire, the catalogue contains a colour chart which will be found useful. The catalogue will be forwarded upon application to the makers.

Relaying of Piccadilly.

We learn that the Improved Wood Pavement Co., Ltd., of New Bridge-street, have completed their section of Piccadilly (Piccadilly-circus to Piccadilly-place, which is the most important section) in ten days under contract time.

Change of Address.

The Leeds Fireclay Company, Ltd. (Head Office: Wortley, Leeds), after having their London Office in the Strand for many years, have followed the trend west and taken a block of premises at Leeds House, 2, Cavendish-place, Oxford-circus, London, W.1. The offices are now occupied, and there is being fitted up one of the finest showrooms in the City. The display of Leeds Fireclay products will include Burmantofts terra-cotta (the ground floor front is built of this material), glazed bricks and tiles, and sanitary fittings.

TENDERS

Communications for insertion under this heading should be addressed to "The Editor," and must reach him next week not later than Tuesday evening.

* Denotes *accepted.*
† Denotes *provisionally accepted.*
‡ Denotes *recommended for acceptance.*
§ Denotes *accepted subject to modifications.*

ADEL.—Memorial hall in Church-lane, Adel. Messrs. G. Frederick Bowman & Son, architects, Leeds :—

*H. & D. Leslie, Leeds.

AYLESBURY.—Buildings comprising church and schools, on the corner of Harebreaks estate, for the trustees of the Wesleyan Church. Messrs. A. Brocklehurst & Co., F.R.I.B.A., architects, Palatine Bank-buildings, 10, Norfolk-street, Manchester :—

*Cannon Green & Co., Ltd., Aylesbury.

BALROTHERY.—Cottages for the R.D.C. :—

*G. Rankin	£295
*Edward Rankin	286
*Joseph Rooney	£295–330

BARNSLEY.—Alterations and additions to schools for the E.C. Messrs. Dyson, Cawthorne & Coles, architects, 10, Regent-street :—

Racecommon-road—
Mason—
*Schofield & Son.
Joiner—
*England, Ltd.
Slater—
*Dawber, Townsley & Co., Ltd.
Plumber—
*A. Bray.
Doncaster-road—
Mason—
*Schofield & Son.
Joiner—
*F. Ratcliffe.
Plumber—
*Ed. Broley & Sons.
Grove-street—
Mason—
*H. Medley & Son.
Joiner—
*F Ratcliffe.
Slater—
*Dawber, Townsley & Co., Ltd.
Plumber—
*Ed. Broley & Sons.
Plasterer—
*H. Lockwood.
Painter—
*The Barnsley Decorators.
(All of Barnsley).

BRAY.—Fencing and iron gates at new houses in Vevay, for the U.D.C. :—

Liffey Engineering Works	£2,120
Kennan and Sons	1,995
Smith & Pearson	1,918
City of Dublin Engineering Co.	1,735
*J. T. Doyle, Shankill	1,471

BRIDLINGTON.—Electrical installation, for the T.C. Borough Engineer :—

W. Carr & Son, Bridlington.
Miller & Garness, Hull.
The Service Co., Bridlington.
Casse & Walker, Bradford.
F. Abba & Co., Hull.
Napier & Wheeldon, Hull.
N. Wightman, Hull.
A. Shaw & Sons, Hull.
Eric W. Pratt, Hull.
W. T. Drabble & Co., Bridlington.
E. W. Marsh & Son, Bridlington.
The Humber Elect. Eng. Co., Hull.
A. S. Padgett & Son, Bridlington.
*G. H. Jarvis & Son, Bridlington £127 17 6

BRIGHTON.—Construction of lavatories drainage works and reinforced concrete roadway at the Southwick Power Station, for the C.B. :—

G. Lynn & Sons, Brighton	£4,375
R. Cook & Sons, Ltd., Crawley	4,358
Field & Cox, Ltd., Brighton	4,333
*Limpus & Son, Hove	3,895

BROMLEY.—Administration block at the Isolation hospital, Skym-corner, Bromley Common, Kent, for the West Kent Joint Hospital Board :—

*C. H. H. Kenworthy, Herne Bay .. £17,302

CRANBROOK.—(1) Materials and fittings, and for work to be done in connection with proposed formation of lavatories, bathrooms, etc., and (2) installation of central heating in connection with the tramp wards at Union House for the B.G. Mr. H. J. Benians, architect, Goudhurst, Kent :—

(1)—

F. Marshall & Son, Cranbrook	£779 0 0
A. Slingsby & Son, Cranbrook	732 0 0
*W. P. Woodgate, High Halden	725 0 0

(2)—

F. G. Marshall & Son, London	585 10 0
W. P. Woodgate, High Halden	459 0 0
White & Co., Tonbridge	399 16 3
Fredk. Hayden, Ltd., Tunbridge Wells	375 0 0
Buckleys (London), Ltd., London	355 0 0
*Isteed & Read, Rochester	302 10 0

CREWE.—Extensions to the Crewe Mental hospital, for the Management Committee. Mr. James Martin, architect, Westminster Bank-chambers, Nantwich-road. Quantities by the architect:—

*Stephen Heath & Son, Newcastle (Staffs) £12,997 12 1

CROYDON.—Re-pointing of chimney stacks at the Town Hall, for the C.B. :—

*R. C. Cutting & Co., London £155

CROYDON.—Erection of Long-lane school, for the C.B. :—

F. M. Bleach & Co., London	£16,734 15 7
Mullen & Lumsden, Ltd., London	15,759 0 0
Hill & Gurr, Bromley	15,675 0 0
W. Akers & Co., Ltd., London	15,554 0 0
J. E. Billings & Co., Ltd., London	15,510 0 0
J. Smith & Sons (Norwood), Ltd., London	15,251 0 0
E. J. Saunders, Croydon	15,250 0 0
Truett & Steel, Ltd., Thornton Heath	15,219 0 0
Crawley & Co., London	15,116 0 0
E. D. Winn & Co., Ltd., London	15,000 0 0
Perry's (Ealing), Ltd., Ealing	14,589 0 0
J. Crewdson, Horley	14,476 0 0
Wilson Lovatt & Sons, Wolverhampton	14,216 0 0
Grace & Marsh, Ltd., Croydon	14,189 0 0
*G. E. Everitt & Sons, Ltd., Croydon	13,013 0 0

GLASGOW.—Houses at Ruchill, for the T.C. :—

*Atholl Steel Houses, Ltd., 124 houses.
*Kane Brickwood Co., 112 houses.

GREENS NORTON.—Alterations, decorations and minor repairs to Laburnum Cottage, also erection of new loose boxes, for Captain Ainger. Mr. G. P. Allen, F.R.I.B.A., architect and surveyor, 81, High-street, Bedford :—

W. H. Hefford	£259 2 0
Horace P. Brown	239 17 6
*H. J. Newport	233 18 6

(All of Towcester.)

GRIMSBY.—Quay wall at river head, for the T.C. Mr. H. G. Whyatt, Borough Engineer, 170, Victoria-street :—

*Hewins & Goodhand, Grimsby £875

GRIMSBY.—New school in Armstrong-street, for the T.C. :—

‡Hewins & Goodhand, Ltd., Grimsby £49,848

HEMEL HEMPSTEAD.—48 houses in blocks of 4 on the Elephant Farm estate, for the Corporation. Mr. A. Murray-Smith, architect :—

W. H. Fincham, Chelmsford	£26,244
C. Miskin & Sons, Ltd., St. Albans	26,040
G. P. Whitby, St. Albans	24,160
F. P. Bliss & Son, Bushey	23,744
David Weston & Co., Ltd., London	23,240
Walter Jones & Sons, London	22,840
Jeffs & Bigley, Ltd., Letchworth	22,392
Ralph West, Northampton	22,296
Arthur Cole, Ltd., Luton	22,128
S. E. Moss, Southend-on-Sea	21,240
H. Lacey & Sons, Luton	20,800
Clarke & Tickner, Barry	20,786
W. F. Bailey, Hitchin	20,064
Arthur Carter, Luton	20,064
*Theo Conway, Ltd., Weymouth	19,978

(Subject to approval of M.H.)

HEMEL HEMPSTEAD.—Excavating for and laying sewer 7 in. diameter and approximately 125 yards in length, with all the necessary manholes and works incidental thereto, at Apsley End, King's Langley, for the R.D.C. Messrs. W. H. Radford & Son, engineers, Nottingham :—

J. W. McMillan & Co., Hatfield	£772 7 8
A. J. Edridge, Watford	398 5 0
W. T. Jones, Oxford	378 0 0
W. D. Wells, Hemel Hempstead	369 0 0
Chas. Ball, Letchworth	358 12 8
†Bracey (Roads), Ltd., Watford	334 11 8

HESTON AND ISLEWORTH.—Building extensions at the Electricity works, for the U.D.C. :—

*A. Good £2,095 4 9

(In lieu of previously accepted tender.)

ILKLEY.—Conveniences in West View-park, for the U.D.C. Mr. A. Skinner, engineer and surveyor:—

Baldwin & Oakley, Leeds.
*Dean & Mennell, Ilkely.
Lee & Lupton, Yeadon.
L. T. Learoyd, Ilkley.
J. S. Bramley, East Ardsley.

IPSWICH.—Houses on the Broke Hall housing site for the T.C. :—

*J. Noller, 20 houses (each)	£475 0 0
*A. S. Green, 10 houses (each)	479 10 0
*R. G. Seaman, 10 houses (each)	482 10 0

ISLEWORTH.—Extensions to the Town School, for the Heston and Isleworth U.D.C. :—

Moorman Ward & Co., Isleworth	£7,019 10 10
Leonard Lown & Co., London	6,580 10 0
Milman & Co., Ltd., Ealing	6,480 0 0
H. Pickrill, Wealdstone	6,096 0 0
F. D. Hidden & Co., Brentford	5,980 0 0
Limpus & Son, Kingston	5,976 0 0
R. Emmett, Hounslow	5,761 0 0
T. Hiscock, Ltd., Hounslow	5,677 0 0
Triangular Construction Co., East Molesey	5,670 0 0
G. Challis & Co., Ltd., Brentford	5,605 0 0
Jones & Elliott, Isleworth	5,571 0 0
Stanley Ellis, Ltd., Guildford	5,546 0 0
Building & Public Construction Co., Ltd., Swindon	5,389 0 0
P. F. E. Carter, Hounslow	5,387 10 0
A. J. Thair, Isleworth	5,385 0 0
W. Lacey, Hounslow	5,374 0 0
E. D. Winn & Co., Ltd., London	5,310 0 0
F. G. Cressy, Ltd., Chiswick	5,286 0 0
Thoroughgood Bros. & Son, Surbiton	5,225 0 0
*W. J. Drinkwater & Sons, Feltham	4,990 0 0

ISLE OF WIGHT.—Supplying and laying 3,300 yards of 3-in. diameter cast-iron water mains from Porchfield to Vittiefields, near Carisbrooke, for the R.D.C. Mr. W. E. Blizard, engineer, Castle-lane, Southampton :—

C. A. Springer, Portsmouth	£2,638 0 0
F. Bevis, Ltd., Portsmouth	2,160 0 0
Wort & Way, Salisbury	1,977 10 0
F. Ambrose, Bath	1,943 19 11
Edney & Co., Waterlooville	1,920 0 0
H. Osman & Co., Southampton	1,866 19 2
W. Jukes, Newport	1,750 0 0
H. Moger, Cowes	1,697 0 0
*Middleton & Keene, Ltd., Liss	1,631 13 11

LEEK.—Alterations and additions at the Town Hall, Market-street, for the U.D.C. Mr. W. E. Beacham, engineer and surveyor :—

S. Salt, Leek	£841
E. Buxton, Ashbourne	817
F. Salt, Leek	813
‡T. Godwin & Son, Hanley	776

LONDON.—For various works in connection with the buildings in course of erection on the Brunton Wharf site, for the Stepney B.C. :—

Asphalte roofing.

French Asphalte Co.	£1,341 3 1
International Asphalte Co.	983 9 2½
Val de Travers Asphalte Co.	983 5 5
Engert & Rolfe, Ltd.	943 11 4
British Asphalte Co.	933 11 0
Wm. Salter Edwards & Co., Ltd.	925 16 4
Limmer & Trinidad Lake Asphalte Co.	889 1 6
*Ragusa Asphalte Co.	828 2 5

Tiling for shop roofs.

Messrs. Mabey & Johnson	£85 9 10
Hall & Co., Ltd.	64 18 1
John Williams & Co.	62 0 4
Ellis, Partridge & Co., Ltd.	57 7 6
*Roberts, Adlard & Co.	54 11 4

Slating for mansards.

	20in. x 10in.	16in. x 12in.
Mabey & Johnson	£432 4 3	£394 4 3
Ellis, Partridge & Co., Ltd.	369 10 3	344 11 9
Hall & Co.	362 8 4	337 11 2
John Williams & Co.	355 2 6	329 2 6
Ernest Matthews & Co. (J.&W. Henderson, Ltd.)	337 12 6	*306 15 0
Roberts, Adlard & Co.	327 10 11	308 8 5

Plumbing work.

John Blaikie & Sons, Ltd.	£3,508 17 11
W. H. Gascoigne & Co.	3,353 12 1
*Walter Cowen, Ltd.	2,683 16 0

LONDON.—Steel windows for the buildings on the sites : (*a*) Brunton Wharf site, and (*b*) Milk-yard site, for the Stepney B.C. :—

(A)

F. A. Norris & Co.	£279 13 9
Williams & Williams, Ltd.	186 10 9
West Bromwich Casement & Engineering Co.	182 15 6
John Thompson Beacon Windows, Ltd.	134 2 6
John Hill & Sons	130 13 0
*The Standard Metal Window Co.	116 15 0

(B)

F. A. Norris & Co.	£208 14 0
West Bromwich Casement & Engineering Co.	189 2 3
John Thompson Beacon Windows, Ltd.	164 10 10
Williams & Williams, Ltd.	157 10 3
John Hill & Sons	146 15 6
*Standard Metal Window Co.	127 4 2

LONDON.—Alterations to the cloakroom accommodation and lavatory arrangements, at Ladywell Baths, for the Lewisham B.C. Borough Surveyor :—

Walker, Clinging & Co.	£540
Horace R. Watt	520
*Cole, Loasby & Co., Ltd.	505

(All of Lewisham.)

MALDON.—Filling in the Bight at the junction of the Bath Wall and Marine Parade with material from the shoal, for the T.C. :—

*A. G. & A. Saunders, Maldon £550

MANCHESTER.—Additions to the premises of Messrs. Woodhouse & Co. Mr. W. Newman, architect, 44, Johnson-road, Nottingham :—

Brick and Concrete work—
*Henry Green & Sons, Manchester.
Joiners—
*Tinker & Young, Ltd., Manchester.
Plumber—
*A. Tinker, Manchester.
Steelwork—
*Banister, Walton & Co., Ltd., Manchester.
Revolving shutters—
*G. Brady & Co., Manchester.
Casements—
*Helliwell & Co., Ltd., Brighouse.

MANCHESTER.—Conversion of premises at the corner of Oxford-road and Boundary-street, East, Manchester, into business premises for Mr. M. Franks. Mr. A. McDonald, architect, 71, Meadow-street, Moss Side :—

*H. Pollick, Manchester.

MARKETHILL.—Public elementary school for Armagh Regional E.C. Captain G. D. Taylor, architect, English-street, Armagh. Quantities by Mr. S. C. Hunter :—

*J. Sinton & Co., Armagh £4,640

MONAGHAN.—(*a*) 10 houses on the site of the old workhouse grounds ; (*b*) the conversion of existing front buildings into two houses ; and (*c*) the erection of a septic tank and other development work in connection with the same, for the U.D.C. :—

Patrick McEntee, Ballybay	£4,699 16 10
J. Donnelly & Sons, Enniskillen	4,502 11 8
Henry McAvenchey, Armagh	4,300 0 0
J. Boyd & Sons, Co. Down	4,270 0 0
R. Cullen & Sons, Portadown	3,980 14 0
P. McKenna & Sons, Armagh	3,810 12 7
James Murphy, Clones	3,452 5 0
*Henry McGeough & Sons, Monaghan	3,423 2 0
Chas. Hughes, Co. Armagh	3,382 0 0

MONMOUTH.—Public conveniences, for the T.C Mr. W. J. H. Biddle, Borough Surveyor :—

O. Parry	£939
J. Mackie & Son	942
*A. C. Lock	843

(All of Monmouth.)

NELSON.—Secondary school. Mr. S. Wilkinson, F.R.I.B.A., architect, 16, Ribblesdale-place, Preston :—

*Dryland & Preston, Ltd., Littleborough.
Joiner—
*A. Wolstenholme, Bury.
Plumber—
*H. Tattersall, Ltd., Rochdale.
Slaters—
*A. Rushton & Sons, Littleborough.
Plasterers—
*R. Rawlinson & Sons, Burnley.
Painters—
*Nelson Co-operative Society, Ltd., Nelson.

NEWCASTLE-UNDER-LYME.—Alterations and additions to 12, Iron-market, for the Council. Mr. A. G. Sherwin, architect, Rectory-chambers, Newcastle, Staffs :—

Till & Harding, Ltd., Stone	£3,493 0 0
Meiklejohn & Son, Stoke-on-Trent	3,480 0 0
Adams (Builders), Ltd., Liverpool	3,470 0 0
G. Ellis, Hanley	3,425 0 0
Tompkinson & Betteley, Longton	3,367 0 0
T. Roberts, Biddulph	3,343 12 0
S. Heath & Son, Newcastle	3,247 0 0
J. Deakin, Rough Close	3,200 0 0
*H. Howlett & Sons, Hanley	3,150 0 0

NORTH DUBLIN.—Cottages for the R.D.C. :—

*C. Bissett (each)	£345
*Farmer Bros. (single)	£355–377
*Mangan Bros.	337–341
*W. Lacy	350
*J. Duff	358

NOTTINGHAM.—804 houses and 6 shops on the Bulwell Hall estate, for the T.C. Mr. T. C. Howitt, A.R.I.B.A., architect, 58-59, Long-row.

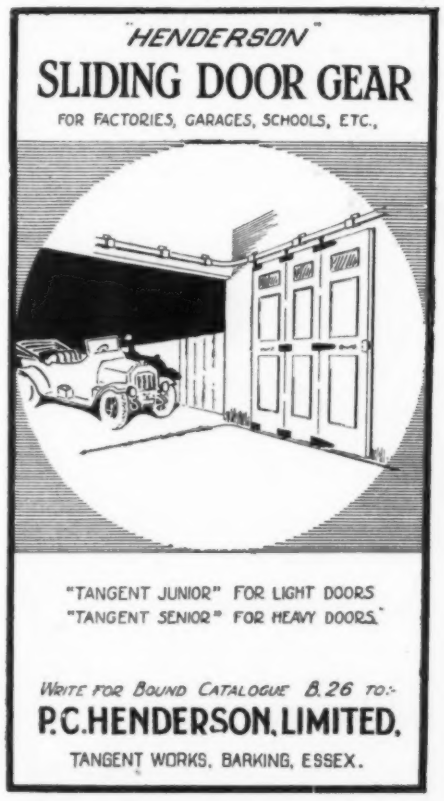
*A. Goodchild, Nottingham .. £264,834 14 0

NOTTINGHAM.—Covered market on the King Edward-street site, for the T.C. :—

‡F. Evans & Sons, Bulwell £44,600

OAKENGATES.—Pumping station and small mess room, together with foundations for engines and other machinery, at Hilton Bank waterworks, Sheriffhales, for the U.D.C. Messrs. John Taylor & Sons, engineers, Caxton House, Westminster, S.W.1 :—

*Murray & England, Oakengates £1,775 6 0



PAISLEY.—For works in connection with the housing scheme at Barracks, for the T.C. The Master of Works, Gilmour-street :—

Brickwork—
*J. & J. Crangle.
Carpenter work—
*Cochrane & Keith.
Plumber work—
*Geo. Martin.
Slater work—
*Reenan & Kelso.
Plaster work—
*Malcolm & Co.
Painter work—
*J. & J. McCrorie.
Electric lighting—
*Joseph Bell.
Fencing—
*J. Cassells & Sons.

(All of Paisley.)

POOLE.—Pair of semi-detached houses, adapted in the first instance to be used as temporary accommodation for the Rates Department in Market-street, for the T.C. Mr. E. J. Goodacre, Borough Engineer and Surveyor :—

F. W. Burton & Son, Bournemouth	£1,627 17 0
Bryant & Trowbridge, Christchurch	1,540 0 0
Kingsbury & Sons, Poole	1,530 0 0
J. Francis, Bournemouth	1,487 3 0
Burt & Vick, Poole	1,398 0 0
H. & W. Hawkins, Parkstone	1,300 8 9
Grant & Rigler, Poole	1,195 0 0
*Newell & Sons, Poole	950 0 0

PORTADOWN.—Repairs, also alterations to Portadown Technical school premises, for the County of Armagh Regional E.C. :—

*Collen Bros., Portadown £620

PORTSMOUTH.—Alterations, etc., London-road, for Messrs. Parkers (Pth), Ltd. Messrs. A. E. Cogswell & Sons, chartered architects and surveyors, Prudential-buildings :—

S. Salter, Southsea	£1,748
Light Bros., Ltd., Portsmouth	1,727
John Lay & Co., Portsmouth	1,649
F. J. Privett, Southsea	1,567
E. & A. Sprigings, Portsmouth	1,497

RAINFORD (Lancs.)—96 lineal feet retaining wall, for the Council. Surveyor, engineer :—

*Exors. J. Pilkington, St. Helens £201 5 0

SALFORD.—Public elementary school, for the City Council :—

*Fearnley & Sons, Ltd., Salford £22,000

SOUTHAM.—Sixteen parlour-type houses at Fenny Compton, for the R.D.C. :—

*T. Kench, Eydon £6,800

(Subject to M.H. approval.)

SOUTHAM.—Six parlour type houses at Napton, for the R.D.C. :—

*H. W. Lawrence, Kenilworth £2,975

SOUTHAMPTON.—For (1) laying two-coat asphalt in Above Bar-street ; (2) laying two-coat asphalt in Northam-road ; (3) stormwater draining, kerbing, channelling and paving (reinforced concrete or asphalt) carriageway, Winchester-road (part of) ; (4) storm water draining, kerbing, channelling and paving (reinforced concrete or asphalt) carriageway, Paynes-road, for the C.B. Borough Engineer :—

(1)

*Limmer & Trinidad Lake Asphalt Co., Ltd., Eastleigh	£1,953 7

(2)

*Limmer & Trinidad Lake Asphalt Co., Ltd., Eastleigh	3,722 16 5

(3)

*J. Douglas, Southampton	1,852 11 3

SOUTHAMPTON.—Reconstruction of part of the Royal Pier, and erection of stores, etc., for the Harbour Board. Mr. E. Cooper Poole, engineer :—

*J. Howard & Co., London £5,371 8 9

STAVELEY.—Reconstruction and widening of the bridge over the River Doe Lea at Norbriggs, on Chesterfield-Worksop main road ; and widening adjacent main road for a length of about 180 yards, for the Derbyshire C.C. Mr. J. W. Horton, County Surveyor, St. Mary's-gate, Derby :—

*C. S. Tomlinson, South Normanton .. £4,615

TANFIELD.—Council chambers and offices at Tantobie, for the U.D.C. Mr. J. Heslop, surveyor :—

*T. Soulsby, Chester-le-Street.

TONYREFAIL.—Six parlour and 14 non-parlour type houses at Tynybryn, Tonyrefail, for the Llantrisant and Llantwit Fardre R.D.C. Messrs. Thomas & Morgan & Partners, architects and engineers, 23, Gelliwasted-road, Pontypridd :—

Rosser Bros., Nelson	£7,815
T. Lewis & Sons, Tonyrefail	6,840
E. W. James & Co., Cardiff	6,818
T. Jenkins, Blaengarw	6,130
Bright & Addicott, Cardiff	6,118
Rhys J. Rees & Co., Ltd., Treforest	6,116
W. A. Jones, Llantwit Major	6,116
Wm. John, Llantrisant	5,920
J. Snell, Abertillery	5,916
Thomas Jenkins, Tonyrefail	5,888
Newcombe & Co. (Cardiff), Ltd.	5,870
S. D. Bevan, Beaufort, Mon.	5,840
B. Roberts, Trealaw	5,704
*D. J. Davies, Blaengarw	5,569

TOTTENHAM.—Erection of the White Hart Inn, Tottenham, including dance hall, garage and fittings, for the Improved Public House Co., Ltd. Mr. F. C. P. Monson, F.R.I.B.A., architect, Finsbury Pavement House, 120, Moorgate, E.C.2. Quantities by Messrs. Gardiner & Theobald, 96, Gower-street, W.C. :—

W. Shurmur & Sons, Ltd.	£33,300
Douglass Halse & Son, Ltd.	32,850
Geo. Parker & Son	32,678
W. H. Lorden & Son, Ltd.	32,589
Rice & Son	32,576
Walter Lawrence & Son, Ltd.	32,300
Moffatt Bros.	31,997
Ashby & Horner	31,972
Rowley Bros., Ltd.	31,890
Albert Monk	31,700
Henry Knight & Son	31,539
*Fairhead & Sons, Ltd.	31,000

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TRURO.—Territorial hall, for the Cornwall Territorial Force Association. Mr. A. J. Cornelius, F.R.I.B.A., architect, Truro :—

*J. Williams, St. Austell	£3,701

TWICKENHAM.—Nelson school, for the B.C. :—

D. M. Draisey, Brentford	£16,750 0 0
Buckett & Pead, London	14,399 17 9
Speechley & Smith, Richmond	13,230 0 0
F. D. Hidden & Co., Ltd., Brentford	12,999 0 0
Thomas Hiscock, Ltd., Hounslow	12,700 0 0
F. & A. Baynton, London	12,669 0 0
Goole & Son, Ltd., Richmond	12,584 0 0
Y. J. Lovell & Son, Gerrard's Cross	12,474 0 0
E. D. Winn & Co., Ltd., S.W.1	12,358 0 0
G. Challis & Co., Ltd., Brentford	12,212 0 0
W. H. Gaze & Sons, Ltd., Kingston	12,183 0 0
A. J. Thair, Isleworth	11,956 0 0
W. H. Brown (Leatherhead), Ltd., Kingston	11,670 0 0
‡Thorogood Bros. & Son, Surbiton	11,555 0 0

WALSINGHAM.—Houses and bungalows in the parishes of Fulmodestone, Little Snoring and Field Dalling, for the R.D.C. Mr. W. H. Moffatt, engineer and surveyor :—

R. W. Holmes, Grimsby	£6,300 0
Purdy & Son, Walsingham	6,300 0
J. W. Palmer, Aylsham	5,641 0
A. E. Guest, Ltd., Lewes	5,511 15
Fisher & Sons, Fakenham	5,400 0
Taylor & Son, Dereham	5,213 10
*Robert Claxton, Wells	5,096 0

WARRINGTON—For completion of 86 houses on the Reynolds-st. site for the C.B. :—

*D. Cooper, Warrington	£12,603 10

WEST BROMWICH.—12 houses on land in Dudley-street, Swan Village, for the C.B. Mr. A. D. Greatorex, Borough Surveyor :—

*R. Smith & Co., Ltd., Walsall.

WOOD GREEN.—30 houses for the U.D.C. :—

*Rowley Bros.
(Subject to M.H. approval.)

WORKSOP.—Parish hall, for Rev. J. H. Turner, St. Anne's. Mr. R. D. Thompson, architect, L.R.I.B.A. 73, Bridge-street :—

*J. H. and M. E. Ilett, Worksop.

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YORK.—For alterations to (1) Fulford-road Special school, and (2) Shipton-street school, for the E.C. :—

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*H. E. Turner & Sons, Ltd., York.
(2)
*W. Birch & Sons, Ltd., York.

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